epartment
nsportation
nal Highway
c Safety
nistration

DEPARTMENT OF
TRANSPORTATION
MAR
LIBRARY

DOT HS 807 001
Test Report

May 1985

Side Impact Protection in Production Vehicles

MDB-to-Car Side Impact Test of a 26° Crabbed Moving Deformable Barrier to a 1981 Honda Civic at 33.5 mph

This document is available to the public from the National Technical Information Service, Springfield, Virginia 22161.

The United States Government does not endorse products or manufacturers. Trade or manufacturers' names appear only because they are considered essential to the object of this report.

TL
242
.58873
1985c

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
DOT HS 807 001		

4. Title and Subtitle
SIDE IMPACT PROTECTION IN PRODUCTION VEHICLES
MDB-TO-CAR SIDE IMPACT TEST OF A 26° CRABBED MOVING DEFORMABLE BARRIER TO A 1981 HONDA CIVIC AT 33.5 MPH

5. Report Date
MAY 1985

6. Performing Organization Code

8. Performing Organization Report No.
850412

7. Author(s)
J. Stultz, Project Engineer, TRC

DEPARTMENT OF TRANSPORTATION
MAR
LIBRARY

9. Performing Organization Name and Address
Vehicle Research and Test Center
St. Rt. 33, Logan County
East Liberty, Ohio 43319

10. Work Unit No. (TRAIS)

11. Contract or Grant No.
DTNH22-82-A-08401

12. Sponsoring Agency Name and Address
U.S. Department of Transportation
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, DC 20590

13. Type of Report and Period Covered
TEST REPORT
April-May 1985

14. Sponsoring Agency Code

15. Supplementary Notes
This test conducted as part of VRTC Project No. SRL 103 Side Impact Protection In Production Vehicles

16. Abstract

This test report documents one of a series of ten crash tests to evaluate side impact protection in various vehicle models. Testing was conducted on a 1981 Honda Civic 4-door Sedan at the TRC Crash Test Facility, East Liberty, Ohio. The test vehicle was impacted on the left side by a moving deformable barrier, crabbed to 26°, at 33.5 mph. The test was a simulation of a 90° intersection collision with the striking vehicle travelling at 30 mph and the struck vehicle travelling at 15 mph. Occupant responses of two side impact dummies were measured. One dummy was located in the driver's designated seating position and one was located in the left rear seating position. The test date was April 12, 1985 and the ambient temperature was 70°F.

17. Key Words	18. Distribution Statement
Occupant Response Moving Barrier Crash Testing	Available from: National Technical Information Service Springfield, Virginia 22161

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	157	

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

TABLE OF CONTENTS

	Page
1.0 PURPOSE AND INTRODUCTION	1-1
2.0 GENERAL TEST AND VEHICLE PARAMETER DATA	2-1
3.0 DATA REQUIRED BY R&D	3-1
APPENDIX A PHOTOGRAPHS	A-1
APPENDIX B DATA PLOT PRESENTATION	B-1
APPENDIX C DUMMY CERTIFICATION	C-1

LIST OF PHOTOGRAPHS

Figure		Page
A-1.	PRE-TEST OVERALL - VIEW 1	A-2
A-2.	PRE-TEST OVERALL - VIEW 2	A-2
A-3.	PRE-TEST OVERALL - VIEW 3	A-3
A-4.	PRE-TEST OVERALL - VIEW 4	A-3
A-5.	PRE-TEST CLOSEUP - VIEW 1	A-4
A-6.	PRE-TEST CLOSEUP - VIEW 2	A-4
A-7.	PRE-TEST DRIVER DUMMY VIEW	A-5
A-8.	PRE-TEST PASSENGER DUMMY VIEW	A-5
A-9.	POST-TEST OVERALL - VIEW 1	A-6
A-10.	POST-TEST OVERALL - VIEW 2	A-6
A-11.	POST-TEST OVERALL - VIEW 3	A-7
A-12.	POST-TEST OVERALL - VIEW 4	A-7
A-13.	POST-TEST CLOSEUP VIEW	A-8
A-14.	POST-TEST DRIVER DUMMY VIEW	A-8
A-15.	POST-TEST PASSENGER DUMMY VIEW	A-9
A-16.	POST-TEST VEHICLE DAMAGE - VIEW 1	A-9
A-17.	POST-TEST VEHICLE DAMAGE - VIEW 2	A-10
A-18.	POST-TEST VEHICLE DAMAGE - VIEW 3	A-10
A-19.	POST-TEST VEHICLE DAMAGE - VIEW 4	A-11
A-20.	POST-TEST OVERHEAD VIEW	A-11
A-21.	PRE-TEST MDB FACE - VIEW 1	A-12
A-22.	PRE-TEST MDB FACE - VIEW 2	A-12
A-23.	POST-TEST MDB FACE - VIEW 1	A-13
A-24.	POST-TEST MDB FACE - VIEW 2	A-13

SECTION 1.0
PURPOSE AND INTRODUCTION

PURPOSE

The main purpose of this test was to evaluate side impact protection in one of a fleet of 2-door and 4-door vehicles. The vehicle was tested using conditions not currently contained in a Federal Motor Vehicle Safety Standard.

INTRODUCTION

A stationary 1981 Honda Civic 4-door sedan was impacted on the left side by a Moving Deformable Barrier (MDB) on April 12, 1985. The test was to simulate an intersection collision with the striking vehicle travelling at 30 mph and the struck vehicle travelling at 15 mph. The orientation angle of the striking vehicle was 90° counterclockwise with respect to the longitudinal axis of the struck vehicle. The leading edge of contact was to be 37 inches forward of the vehicle center of gravity which is defined by accident investigation to be the midpoint of the wheelbase.

To simulate this collision, the MDB was to be towed into the stationary Honda Civic at 33.5 mph with the MDB's wheels crabbed clockwise to 26°. The actual test speed was 33.5 mph and the actual leading edge of contact was 34.5 inches forward of the midpoint of the Honda Civic's wheelbase.

The vehicle was a baseline model with no structural modification. The driver door and left rear door were unpadded.

Section 2 contains General Test and Vehicle Parameter Data. Section 3 contains data required by R & D. Appendix A contains pre-test and post-test vehicle and dummy photographs. Appendix B contains Data Plots. Appendix C contains Dummy Certification Data.

SECTION 2.0
GENERAL TEST AND VEHICLE PARAMETER DATA

The following data sheets describe the General Test and Vehicle Parameter Data.

TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Honda Motor Company, Ltd.

MAKE/MODEL: Honda Civic VIN: JHMST5434BS037494

BODY STYLE: 4-Door Sedan MODEL YEAR: 1981

NHTSA NO.: R & D COLOR: Silver

ENGINE DATA: TYPE: Transverse CYLINDERS: 4 DISPLACEMENT 91 CID

TRANSMISSION DATA: 5 Speed Manual

DATE VEHICLE RECEIVED: 4/8/85 ODOMETER READING: 56068

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

POWER STEERING	No	AUTOMATIC TRANSMISSION	No
POWER BRAKES	No	AUTOMATIC SPEED CONTROL	No
POWER SEATS	No	TILTING STEERING WHEEL	No
POWER WINDOWS	No	TELESCOPING STEERING WHEEL	No
TINTED GLASS	No	AIR CONDITIONING	No
RADIO	Yes	ANTI-SKID BRAKE	No
CLOCK	Yes	REAR WINDOW DEFROSTER	Yes
OTHER			

REMARKS:

1. IS THE VEHICLE STOCK THROUGHOUT? Yes
2. DOES VEHICLE SHOW EVIDENCE OF PRIOR ACCIDENT HISTORY? Yes*
3. DOES VEHICLE SHOW ANY SIGNIFICANT CORROSION? No
4. CONDITION OF THE FRONT/REAR BUMPER AND FRAME: Good

DATA FROM CERTIFICATION LABEL ON LEFT DOOR FACE OR "B" POST:

VEHICLE MANUFACTURED BY: Honda Motor Company, Ltd.

DATE OF MANUFACTURE: 8/81

GVWR: 2790 LBS.,

GAWR: FRONT 1490 LBS., REAR 1390 LBS.

*Small crack on driver's side windshield.

VEHICLE TIRE DATA

RECOMMENDED COLD TIRE PRESSURE: FRONT 24 psi; REAR 24 psi

TIRES ON VEHICLE (MFGR. & LINE, SIZE): BF Goodrich 155 SR 13

BIAS PLY, BELTED, OR RADIAL: Steel Belted Radial

PLY RATING: 3

IS SPARE TIRE "SPACE SAVER"? No

IS SPARE TIRE STANDARD EQUIPMENT? Yes

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (WITH MAXIMUM FLUIDS):

RIGHT FRONT	583	LBS.	RIGHT REAR	425	LBS.
LEFT FRONT	586	LBS.	LEFT REAR	411	LBS.
TOTAL FRONT WEIGHT	1169	LBS. (58.3 % OF TOTAL VEHICLE WEIGHT)			
TOTAL REAR WEIGHT	836	LBS. (41.7 % OF TOTAL VEHICLE WEIGHT)			
TOTAL DELIVERED WEIGHT	2005	LBS.			

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE:	RF 25 5/16	;LF 24 3/4	;RR 24 1/2	;LR 24 716
PRE-TEST ATTITUDE:	RF 25 3/4	;LF 24 7/8	;RR 23 1/8	;LR 23 5/8
POST-TEST ATTITUDE:	RF 24	;LF 25 3/4	;RR 22 7/8	;LR 24 1/4

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 115 LBS. CARGO:

RIGHT FRONT	609	LBS.	RIGHT REAR	587	LBS.
LEFT FRONT	664	LBS.	LEFT REAR	608	LBS.
TOTAL FRONT WEIGHT	1273	LBS. (51.6 % OF TOTAL VEHICLE WEIGHT)			
TOTAL REAR WEIGHT	1195	LBS. (48.4 % OF TOTAL VEHICLE WEIGHT)			
TOTAL TEST WEIGHT	2468	LBS.			

WEIGHT OF BALLAST SECURED IN VEHICLE TRUNK AREA: 0 LBS.

TEST FLUID DATA

TEST FLUID TYPE: RED STODDARD SOLVENT 2; SPEC. GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

"USEABLE" CAPACITY*: 13.6 GALLONS ACTUAL

TEST VOLUME: 2.0 GALLONS

FUEL SYSTEM CAPACITY (DATA FROM OWNERS MANUAL): 12.1 GALLONS

DETAILS OF FUEL SYSTEM: DNA

ELECTRIC FUEL PUMP: Yes FUEL INJECTION: No

DOES ELECTRIC FUEL PUMP OPERATE WITH IGNITION SWITCH "ON" AND THE ENGINE NOT OPERATING? Yes

DATA FROM "RECOMMENDED TIRE PRESSURE" LABEL ON DOOR, POST, GLOVEBOX, ETC.

VEHICLE LOAD (UP TO CAPACITY): FRONT 24 psi; REAR 24 psi

RECOMMENDED TIRE SIZE: 155 SR 13 LOAD RANGE X B, C,

VEHICLE CAPACITY: TYPES OF SEATS: Front - Bucket
Rear - Bench

NUMBER OF OCCUPANTS (DESIGNATED SEATING CAPACITY): 2 FRONT
2 REAR
4 TOTAL

CARGO LOAD 100 LBS.

TOTAL 700 LBS.

*WITH ENTIRE FUEL SYSTEM FILLED WITH FUEL TANK THROUGH CARBURETOR BOWL.

TEST CONDITIONS

TEST NUMBER: 850412

DATE OF TEST: April 12, 1985 TIME OF TEST: 18:39

WIND VELOCITY: 6-8 mph 180° S HUMIDITY: NA

AMBIENT TEMPERATURE AT IMPACT AREA: 70° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 74° F

SUBJECT VEHICLE DATA

	ACTUAL	INTENDED
VEHICLE TEST WEIGHT (LBS.)	2468	2453
MDB TEST WEIGHT (LBS.)	2982	3000
MDB VELOCITY (MPH)*	33.5	33.5
IMPACT POINT (INCHES)**	34.5	37

DUMMIES

	DRIVER	MIDDLE PASSENGER	RT. FRONT PASSENGER	LEFT REAR PASSENGER	RT. REAR PASSENGER
TYPE:	SID			SID	
SERIAL NO.:	123			U02	
INSTRUMENTATION:					
HEAD ACCEL.:	Yes			Yes	
CHEST ACCEL.:	Yes (Upper/Lower)			Yes (Upper/Lower)	
FEMUR L.C.'S:	No			No	
OTHER:	Pelvis/Ribs			Pelvis/Ribs	

RESTRAINT SYSTEM: Both dummies were unrestrained

* As measured over final one foot of travel.

** As measured forward of the midpoint of the test vehicle's wheelbase.

VISIBLE DUMMY CONTACT POINTS:

	DRIVER 123	PASSENGER U02
Head	Left B-Pillar	Left C-Pillar
Chest	Driver's Door Panel	Left Rear Door Panel
Abdomen	Driver's Door Panel	Left Rear Door Panel
Left Knee	Driver's Door Panel	Left Rear Door Panel
Right Knee	Left Knee	Left Knee

DOOR OPENING:

	LEFT	RIGHT
Front	NA*	Easy
Rear	NA*	Easy

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
Front	No	No
Rear	No	No

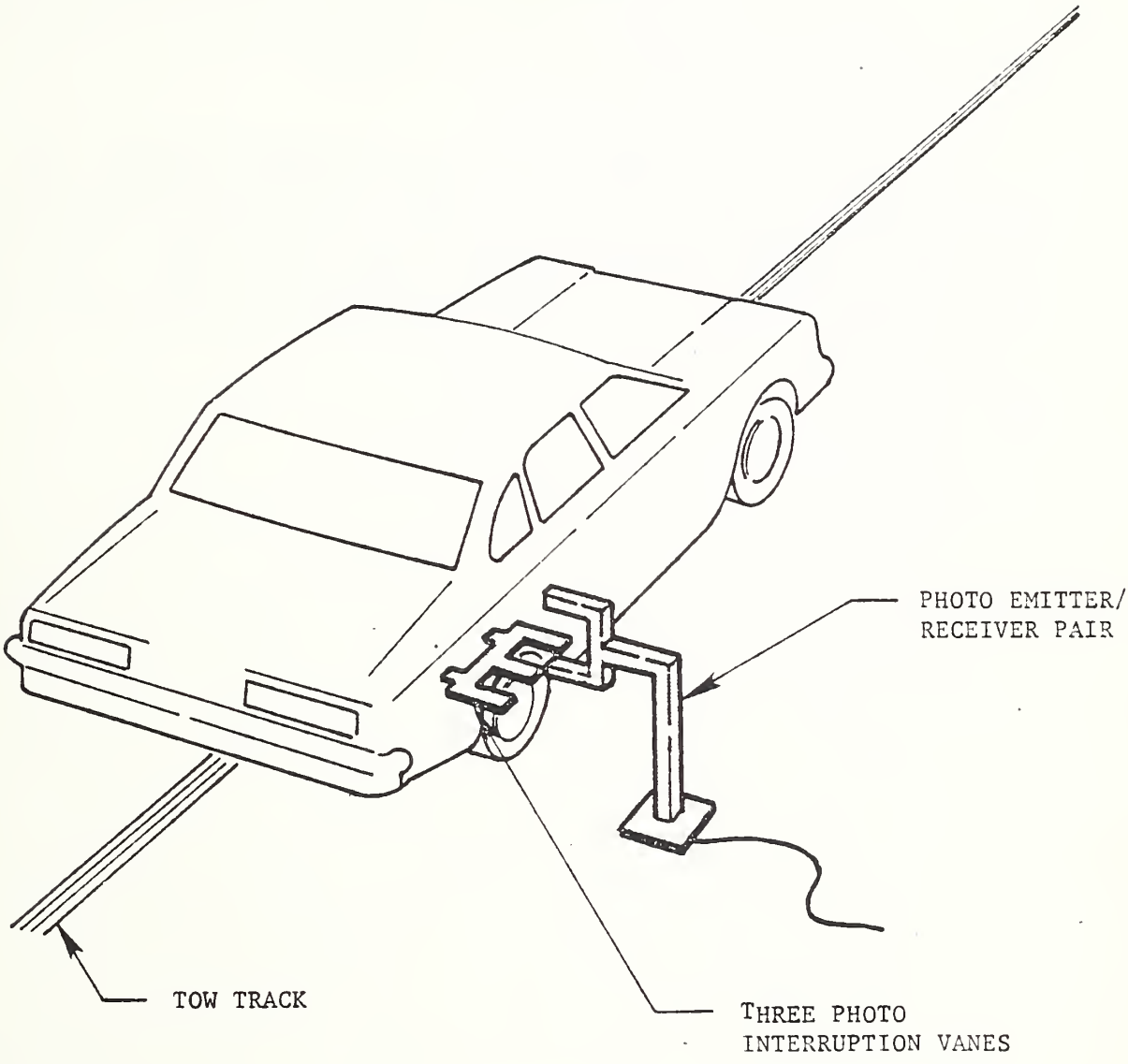
GLAZING DAMAGE: Left side of windshield cracked; all left side windows shattered; no backlight damage.

OTHER NOTABLE IMPACT EFFECTS:

Right front door partially unlatched, left front door hinges remained intact.

*CTM to open left side doors at a later date.

IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane clears emitter/receiver two inches before impact.

The vanes have one foot spacing.

VEHICLE TEST WEIGHT CALCULATION

Test Weight = Unloaded Delivered Weight +
Number of Dummies X 174 lbs. +
Cargo Weight
= 2005 + 2 X 174 + 100 lbs.
= 2453 lbs.

To achieve test weight, the exhaust system, battery, rear bumper, alternator, radiator and overflow tank, air filter and housing unit were removed and 2.0 gallons of Stoddard Solvent were added in the fuel tank. The weight of the test vehicle was measured by placing each wheel on a KJ Law Force Plate.

TEST ANOMALIES

Data channel RFSZG - Vehicle Right Front Sill Acceleration Z-Axis - failed prior to test conduct. No data was acquired from this channel. A resultant was not calculated.

SECTION 3.0
DATA REQUIRED BY R&D

The following pages are included in this section:

1. Dummy temperature control and positioning data
2. Dummy kinematic summary
3. Vehicle crush data
4. Dummy and vehicle accelerometer location and data summary
5. High speed camera information
6. Transducer information

DUMMY TEMPERATURE CONTROL AND POSITIONING

The vehicle was kept inside the temperature controlled crash test building until approximately 2 hours prior to the test. Temperature inside the vehicle and ambient temperature at the crash area were recorded. Dummy temperature while outside the crash test building was maintained portably until approximately 1 minute prior to the test.

The following table summarizes the steps taken to position the instrumented, calibrated dummies in the test vehicle.

DUMMY PLACEMENT AND POSITIONING

SIDE IMPACT DUMMY	DRIVER DSP	REAR PASSENGER DSP
HEAD	Surface of transverse instrument mounting platform is as horizontal as possible without inducing torso movement & midsagittal plane falls in longitudinal plane.	Surface of transverse instrument mounting platform is as horizontal as possible without inducing torso movement & midsagittal plane falls in longitudinal plane.
UPPER TORSO	Placed against seat back. Midsagittal plane is vertical and centered on bucket seat.	Placed against seat back. Midsagittal plane is vertical and contained in the same longitudinal plane as the driver's midsagittal plane.
LOWER TORSO	Midsagittal plane is vertical and centered on bucket seat.	Midsagittal plane is vertical and contained in the same longitudinal plane as the driver's midsagittal plane.
UPPER LEGS (thighs or femurs)	Placed against seat cushion. Planes defined by femur and tibia centerlines are as close as possible to vertical.	Placed against seat cushion. Planes defined by femur and tibia centerlines are as close as possible to vertical.
KNEES	Knees set 14.5" apart between pivot bolt head outer surfaces. Outer surface of right knee pivot bolt is 8.6" from midsagittal plane of dummy. Outer surface of left knee pivot bolt is 5.9" from midsagittal plane of dummy.	Located so that planes defined by femur and tibia centerlines are as close as possible to vertical.
LOWER LEGS	Plane defined by femur and tibia centerlines are as close as possible to vertical longitudinal plane.	Plane defined by femur and tibia centerlines are as close as possible to vertical longitudinal plane.
RIGHT FOOT	Placed on undepressed accelerator pedal -- rearmost point of heel on floorplan in plane of pedal.	Centerline falls in vertical longitudinal plane. Placed on floor as far forward as possible without front seat interference.
LEFT FOOT	Placed on toeboard -- rearmost point of heel on floorpan as close as possible to intersection of toeboard and floorpan. Centerline falls in vertical longitudinal plane.	Centerline falls in vertical longitudinal plane. Placed on floor as far forward as possible without front seat interference.

*NOTE: THE SIDE IMPACT DUMMY DOES NOT INCLUDE ARMS.

DUMMY IN-VEHICLE POSITION RECORDING SHEET

VEHICLE NHTSA NO. R & D

MFR./MAKE/MODEL: Honda Civic

FRONT SEAT TYPE: ___ BENCH
X BUCKET
___ SPLIT BENCH

ADJUSTER TYPE: X MANUAL
___ POWER

BUCKET SEAT BACK TYPE: ___ FIXED
X ADJUSTABLE

TECHNICIANS:
1. B. Miller
2. J. Clarridge
3. D. Carpenter

POSITIONING DATE: April 12, 1985

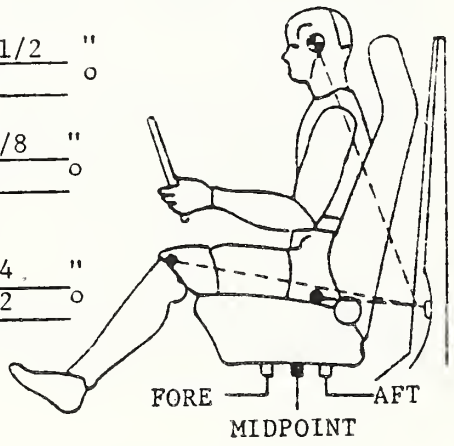
AMBIENT TEMP: 76 °F TIME: 3:45

DRIVER DUMMY # 123

HEAD 20 1/2 "
TARGET* 2 °

KNEE 19 5/8 "
JOINT 96 °

APPROX.
"H" 6 3/4 "
POINT 142 °

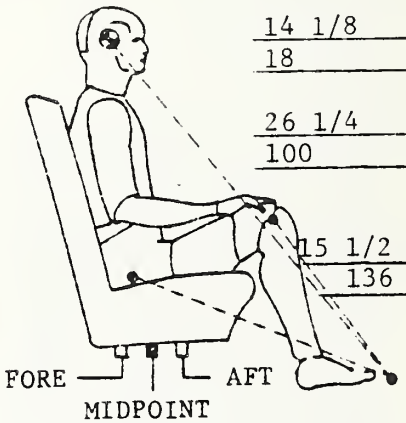


REAR PASSENGER DUMMY # U02

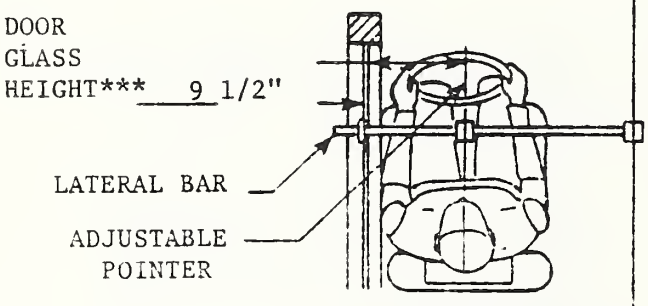
14 1/8 "HEAD
18 °TARGET**

26 1/4 "KNEE
100 °JOINT

APPROX.
15 1/2 " "H"
136 °POINT

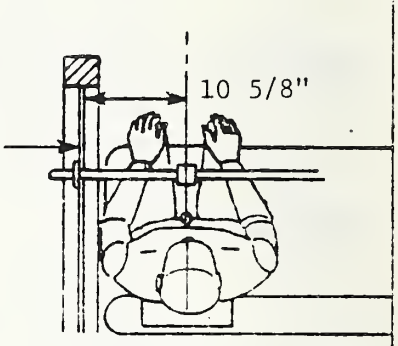


DOOR
GLASS
HEIGHT*** 9 1/2"



DRIVER
DUMMY #
123

DOOR
GLASS
HEIGHT NA

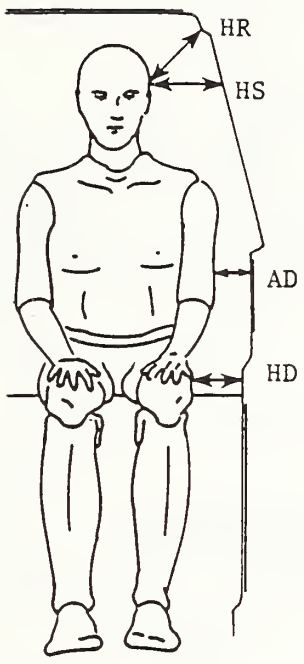


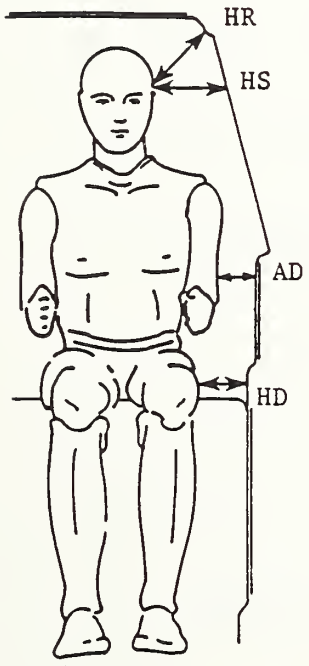
PASSENGER
DUMMY #
U02

*All driver dummy dimensions referenced to top of front door striker bolt and all angles referenced to vertical.

**All passenger dummy dimensions referenced to top of rear door striker bolt and all angles referenced to vertical.

***Door glass height is equal on the right and left side of vehicle at dummy nose level.

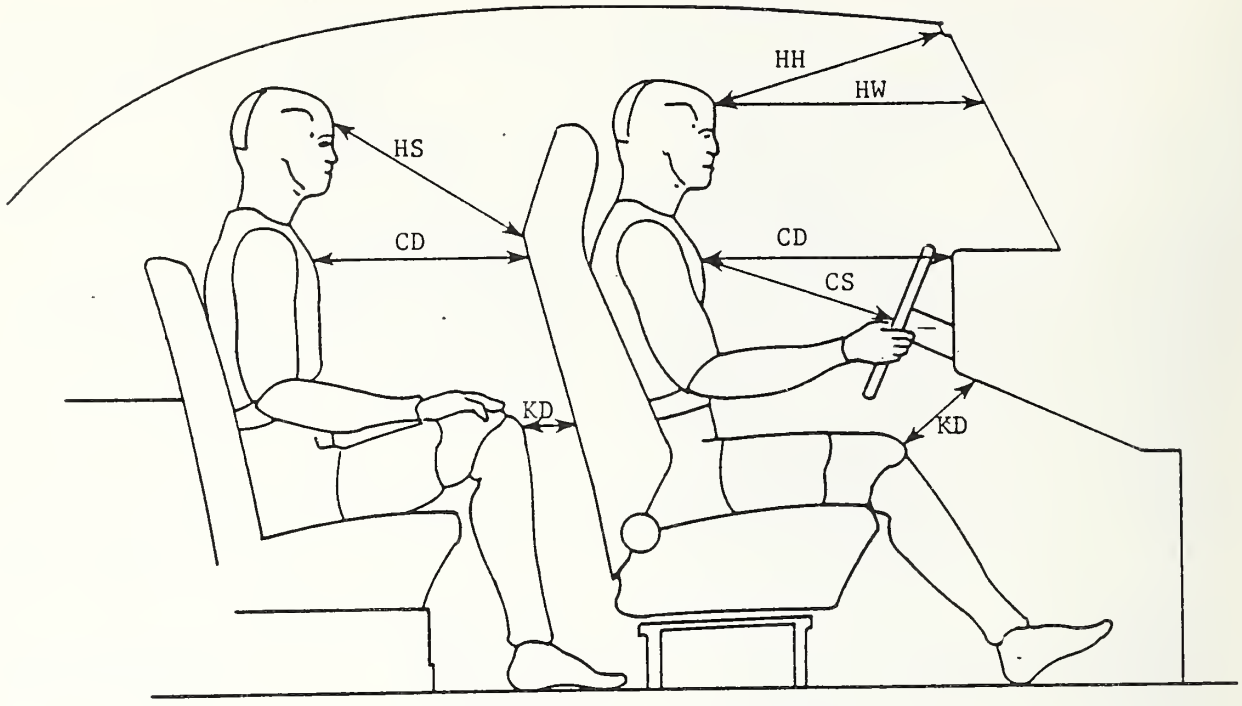




	DRIVER 123	PASSENGER U02
HR	3 1/2	6 7/8
HS	5 3/4	5 1/8
AD	3	3 5/8
HD	5 1/4	5 3/4

ALL MEASUREMENTS IN INCHES

DUMMY LATERAL CLEARANCE DIMENSIONS



	DRIVER 123	PASSENGER U02
HH	16 1/2	DNA
HW	19 3/4	DNA
HS	DNA	23 5/8
CD	23 1/4	16 1/16
CS	17	DNA
KDL	8 1/2	1/4
KDR	9	1/4

ALL MEASUREMENTS IN INCHES

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

DUMMY KINEMATIC SUMMARY

DRIVER

During impact, the dummy's torso contacted the driver's door and the head contacted the driver's side B-pillar. The dummy rebounded rearward across the front occupant compartment. The rear of the dummy's head struck the roof and then the passenger's side header. The dummy came to rest seated upright in the front passenger's seat facing the driver's side.

PASSENGER

During impact, the dummy's torso contacted the left rear door and the head contacted the left C-pillar. The dummy rebounded laterally across the rear occupant compartment in an upright position to the right rear door. The dummy came to rest seated upright in the right rear passenger's seat facing forward.

VEHICLE EXTERIOR PROFILES AND STATIC CRUSH

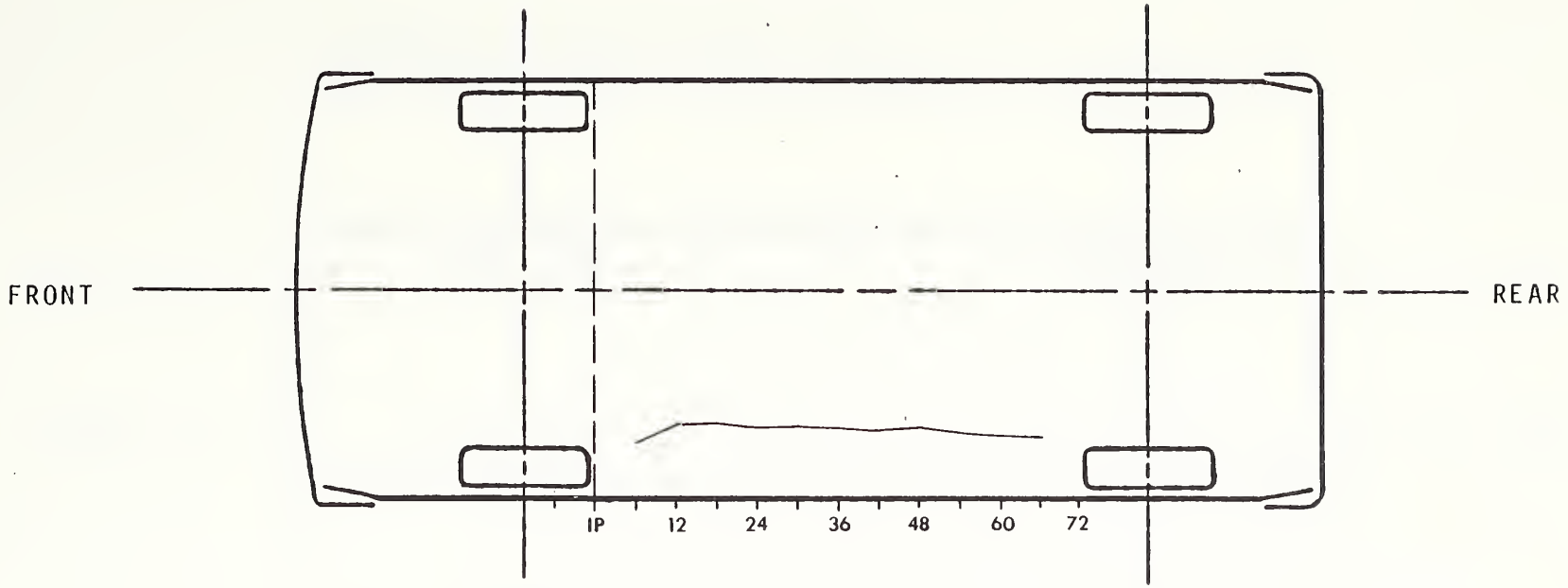
ZERO DISTANCE AT PROJECTED IMPACT POINT*

LOCATION	HEIGHT (in)	6	0	6	12	18	24	30	36	42	48	54	60	66	72	78
PRE-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)																
Axle Height	9.9	X	X	19.3	19.3	19.3	19.2	19.2	19.2	19.2	19.3	19.3	19.4	19.4	X	X
H-Point	17.3	X	X	17.5	17.5	17.4	17.4	17.4	17.4	17.3	17.4	17.4	17.5	17.6	X	X
Mid Door	22.1	X	16.7	17.5	17.4	17.3	17.3	17.2	17.2	17.1	17.2	17.3	17.3	17.3	17.2	X
Window Sill	33.9	20.1	19.8	19.8	19.8	19.8	19.8	19.7	19.6	19.6	19.6	19.7	19.6	19.6	19.6	19.6
Window Top	50.0	X	X	X	X	X	X	26.5	26.4	26.4	26.4	26.5	26.5	26.7	26.9	27.1
POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)																
Axle Height	9.9	X	X	27.1	29.9	29.8	29.6	29.5	29.3	29.0	29.6	28.8	28.5	28.0	X	X
H-Point	17.3	X	X	29.9	32.1	33.0	33.0	32.8	32.6	32.3	32.0	32.3	31.8	31.4	X	X
Mid Door	22.1	X	26.5	28.4	29.9	30.3	30.3	30.4	30.6	30.5	31.1	31.0	31.0	30.8	29.0	X
Window Sill	33.9	23.1	23.8	24.8	26.1	28.8	29.3	29.0	28.9	29.3	30.8	30.4	30.0	29.9	29.2	25.3
Window Top	50.0	X	X	X	X	X	X	31.1	30.9	30.9	31.0	30.5	30.4	30.2	30.1	30.6
STATIC CRUSH (IN)																
Axle Height	9.9	X	X	7.8	10.6	10.5	10.4	10.3	10.1	9.8	10.3	9.5	9.1	8.6	X	X
H-Point	17.3	X	X	12.4	14.6	15.6	15.6	15.4	15.2	15.0	14.6	14.9	14.3	13.8	X	X
Mid Door	22.1	X	9.8	10.9	12.5	13.0	13.0	13.2	13.4	13.4	13.9	13.7	13.7	13.5	11.8	X
Window Sill	33.9	3.0	4.0	5.0	6.3	9.0	9.5	9.3	9.3	9.7	11.2	10.7	10.4	10.3	9.6	5.7
Window Top	50.0	X	X	X	X	X	X	4.6	4.5	4.5	4.6	4.0	3.9	3.5	3.2	3.5

* Projected impact point is 37 inches forward of driver's side wheelbase midpoint. Column readings are front to rear from left to right.

** Reference plane is parallel to and 48 inches from the vehicle longitudinal centerline.

VEHICLE EXTERIOR STATIC CRUSH PROFILE

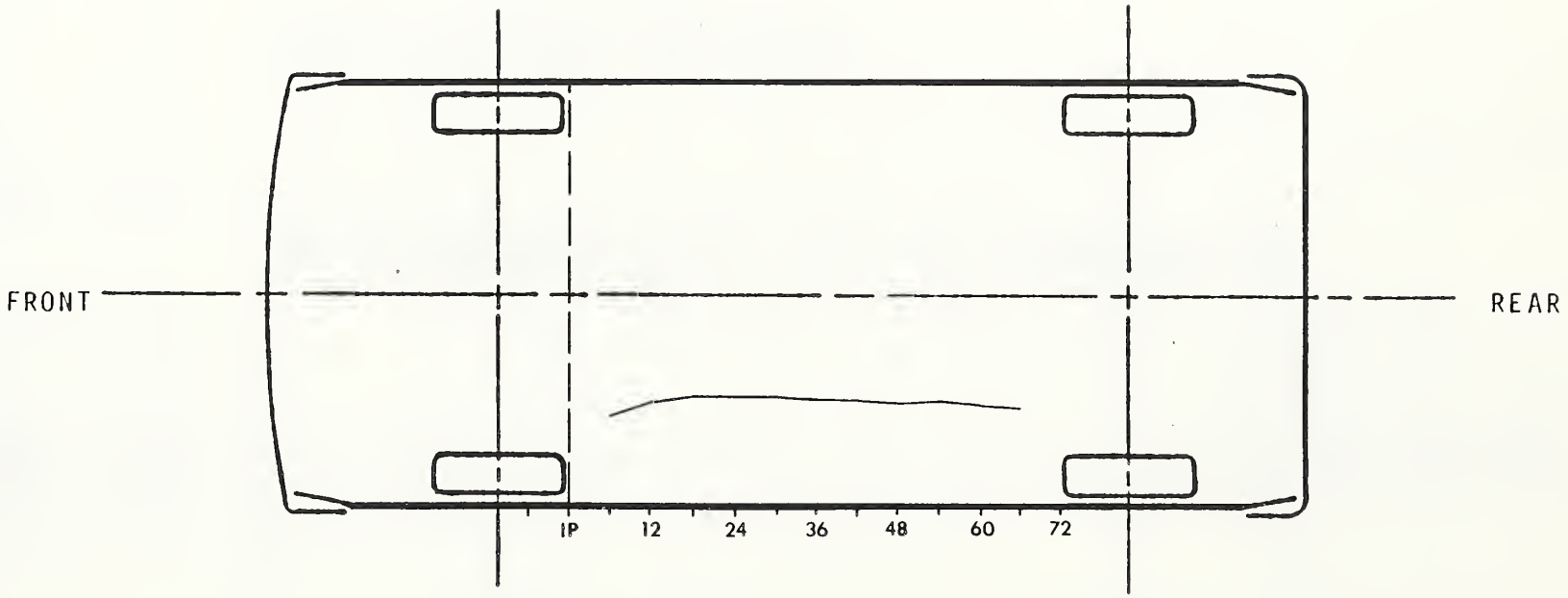


PROFILE LEVEL EQUALS AXLE HEIGHT
IP EQUALS PROJECTED IMPACT POINT

LONGITUDINAL SCALING: 1" = 26.3"

LATERAL SCALING: 1" = 27.1"

VEHICLE EXTERIOR STATIC CRUSH PROFILE

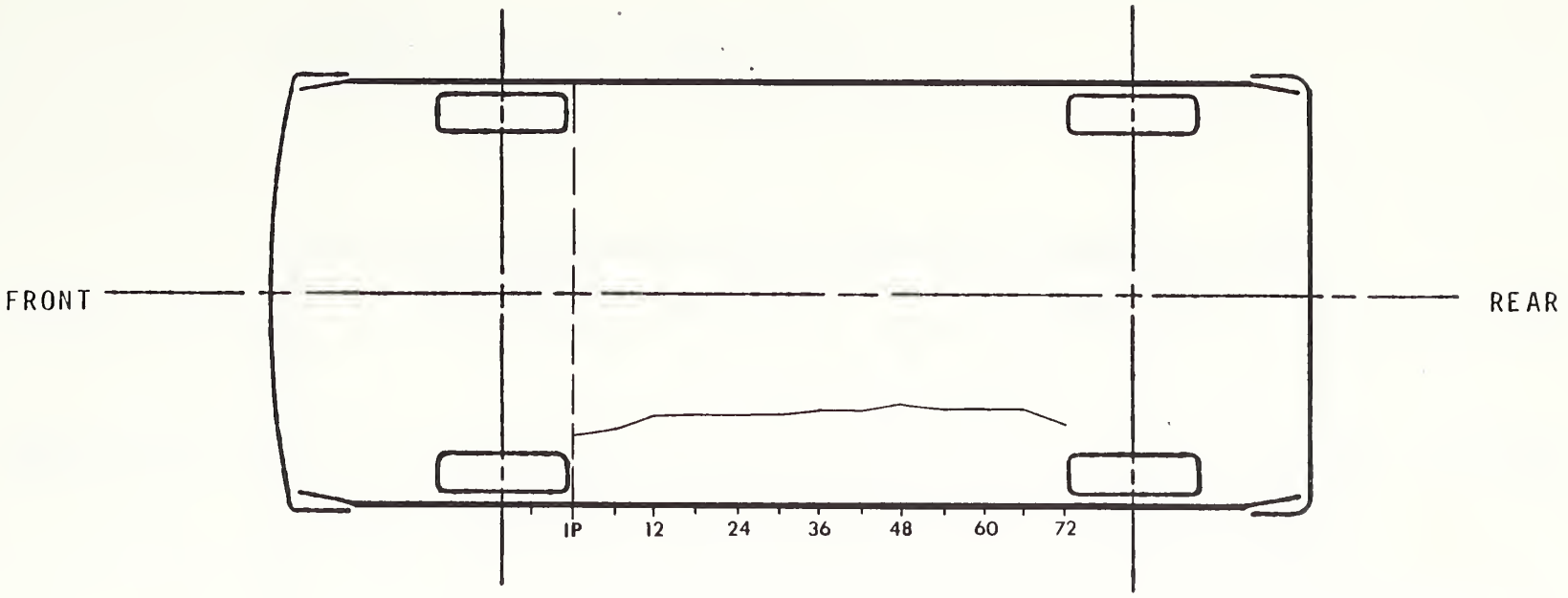


PROFILE LEVEL EQUALS H-POINT HEIGHT
IP EQUALS PROJECTED IMPACT POINT

LONGITUDINAL SCALING: 1" = 26.3"

LATERAL SCALING: 1" = 27.1"

VEHICLE EXTERIOR STATIC CRUSH PROFILE

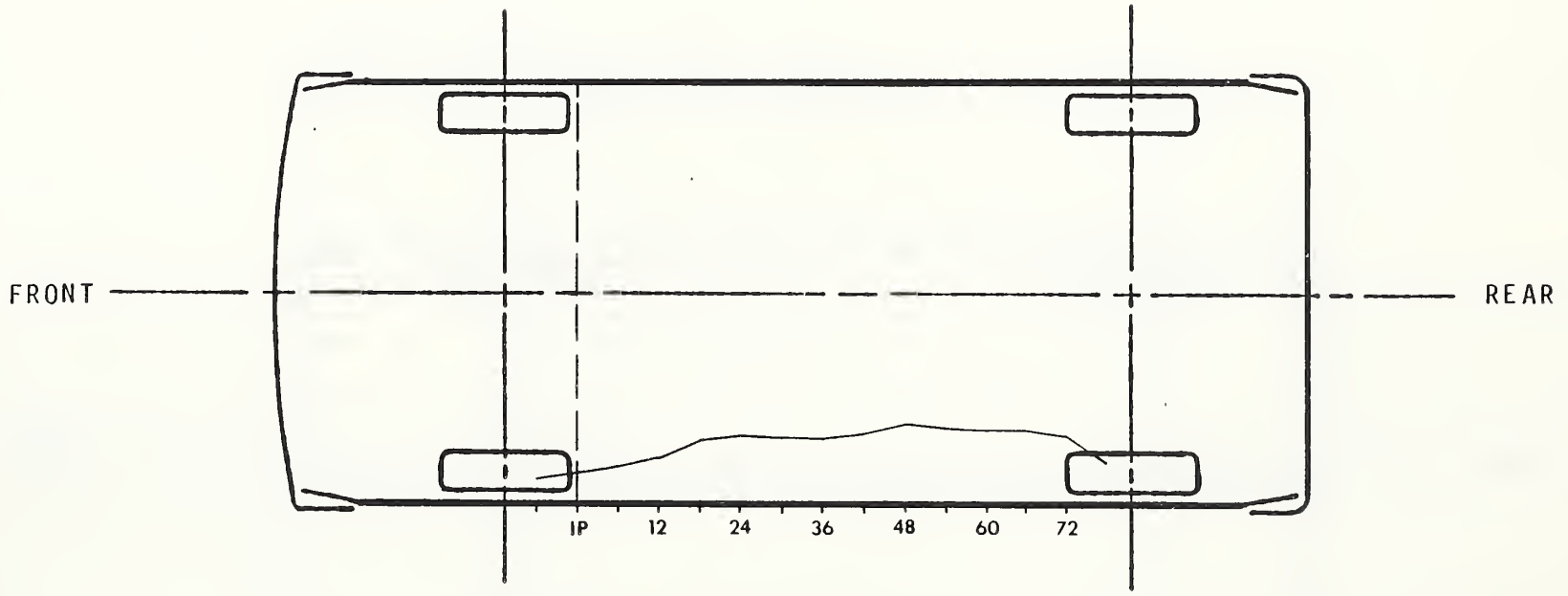


PROFILE LEVEL EQUALS MID-DOOR HEIGHT
IP EQUALS PROJECTED IMPACT POINT

LONGITUDINAL SCALING: 1" = 26.3"

LATERAL SCALING: 1" = 27.1"

VEHICLE EXTERIOR STATIC CRUSH PROFILE

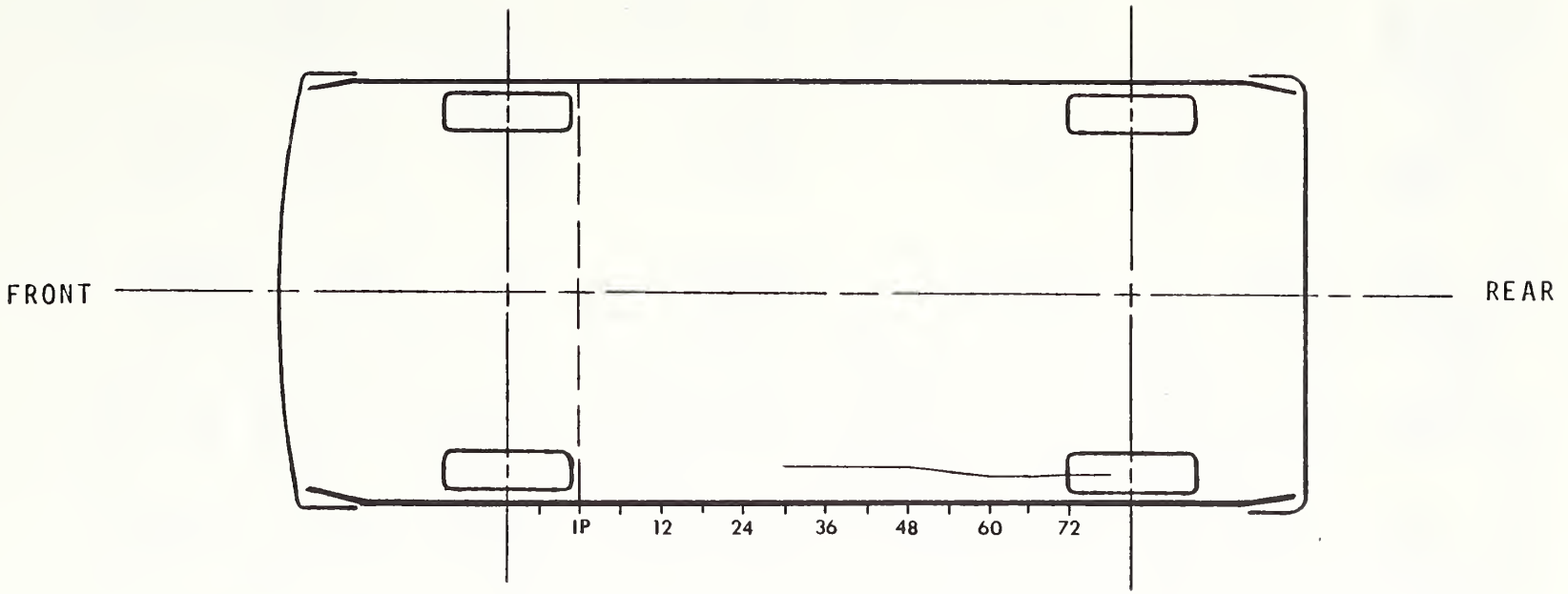


PROFILE LEVEL EQUALS WINDOW SILL HEIGHT
IP EQUALS PROJECTED IMPACT POINT

LONGITUDINAL SCALING: 1" = 26.3"

LATERAL SCALING: 1" = 27.1"

VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS WINDOW TOP HEIGHT
IP EQUALS PROJECTED IMPACT POINT

LONGITUDINAL SCALING: 1" = 26.3"

LATERAL SCALING: 1" = 27.1"

SIDE IMPACT DUMMY DATA SUMMARY

	DRIVER DUMMY				PASSENGER DUMMY			
	POSITIVE DIRECTION*		NEGATIVE DIRECTION**		POSITIVE DIRECTION*		NEGATIVE DIRECTION**	
	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
HEAD ACCELERATION								
LONGITUDINAL	53.88	36.75	12.94	57.75	9.25	37.88	49.44	46.25
LATERAL	118.00	36.63	15.02	30.00	202.69	46.63	21.88	35.88
VERTICAL	35.65	41.38	21.53	32.63	73.78	51.88	53.25	65.50
RESULTANT		129.59 @ 36.63				212.91 @ 46.63		
HIC	737.21	from 35.88 to 42.25			1928.01	from 45.50 to 51.00		
CHEST ACCELERATION								
UPPER SPINE								
LONGITUDINAL	19.23	52.50	5.36	61.25	17.65	49.37	33.80	40.63
LATERAL (P)***	113.71	36.25	19.79	61.25	103.78	40.63	18.91	70.63
LATERAL (R)***	116.71	36.25	19.43	61.25	105.62	40.63	19.31	70.63
VERTICAL	12.54	36.88	6.37	31.25	6.06	25.63	17.33	41.25
RESULTANT (P)		114.98 @ 36.25				110.37 @ 40.63		
RESULTANT (R)		117.95 @ 36.25				112.10 @ 40.63		
DELTA V (MPH)****		30.4 @ 53.12 (P)				26.0 @ 58.75 (P)		
		31.8 @ 53.75 (R)				27.0 @ 58.75 (R)		
LOWER SPINE								
LONGITUDINAL	25.47	51.25	8.62	65.00	21.80	50.00	21.63	37.50
LATERAL (P)	118.18	28.13	25.29	45.62	78.46	32.50	19.49	62.50
LATERAL (R)	119.31	28.13	21.61	45.62	79.57	32.50	19.46	62.50
VERTICAL	23.34	36.25	19.26	265.00	23.03	36.88	9.84	76.88
RESULTANT (P)		118.34 @ 28.13				78.52 @ 32.50		
RESULTANT (R)		119.47 @ 28.13				79.62 @ 32.50		
DELTA V (MPH)		30.4 @ 43.13 (P)				29.2 @ 50.00 (P)		
		31.6 @ 43.75 (R)				30.1 @ 51.25 (R)		
LEFT UPPER RIB								
LATERAL (P)	71.41	25.00	6.22	62.50	122.43	36.25	8.41	83.12
LATERAL (R)	78.79	25.00	10.17	63.75	116.32	35.63	8.12	82.50
DELTA V (MPH)		29.7 @ 80.25 (P)				26.3 @ 81.25 (P)		
		30.5 @ 81.25 (R)				27.9 @ 81.25 (R)		
LEFT LOWER RIB								
LATERAL (P)	80.23	24.38	13.38	65.00	122.63	34.38	35.44	64.38
LATERAL (R)	70.26	24.38	7.78	65.00	119.00	34.38	35.64	65.00
DELTA V (MPH)		28.3 @ 95.63 (P)				29.0 @ 60.62 (P)		
		29.1 @ 94.38 (R)				29.3 @ 60.62 (R)		
PELVIS ACCELERATION								
LONGITUDINAL	10.26	43.75	24.05	38.38	7.16	25.13	24.35	39.00
LATERAL	111.14	29.00	6.34	103.25	119.88	28.75	13.77	46.88
VERTICAL	23.23	32.75	5.92	42.38	33.25	33.38	8.34	75.00
RESULTANT		111.41 @ 29.00				121.54 @ 28.88		
DELTA V (MPH)		31.1 @ 74.00				27.6 @ 43.13		

SIDE IMPACT DUMMY DATA SUMMARY CONTD

	DRIVER DUMMY				PASSENGER DUMMY			
	POSITIVE DIRECTION*		NEGATIVE DIRECTION**		POSITIVE DIRECTION*		NEGATIVE DIRECTION**	
	MAX (in)	TIME (msec)	MAX (in)	TIME (msec)	MAX (in)	TIME (msec)	MAX (in)	TIME (msec)
RIB DEFLECTION †	1.03	57.25	0.06	122.25	1.73	60.38	0.03	27.38

* LONGITUDINAL:	FORWARD	**LONGITUDINAL:	REARWARD
LATERAL:	RIGHTWARD	LATERAL:	LEFTWARD
VERTICAL:	UPWARD	VERTICAL:	DOWNWARD

*** (P) = Primary Sensor, (R) = Redundant Sensor

**** For dummy channels, Delta V is the velocity change at the approximate time of separation from the contact area.

† Compression: Positive

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

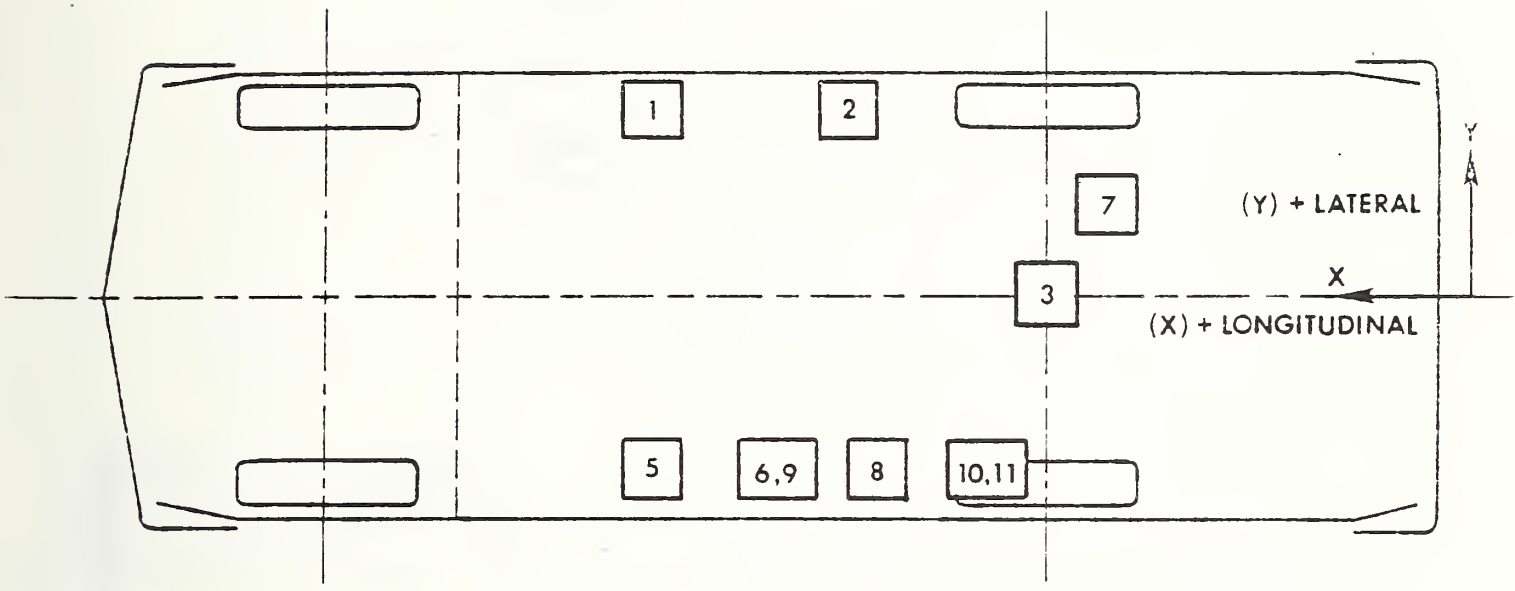
NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION MAX (g)	POSITIVE DIRECTION TIME (msec)	NEGATIVE DIRECTION MAX (g)	NEGATIVE DIRECTION TIME (msec)
1	RIGHT SILL AT FRONT SEAT	98.0	25.0	11.0				
	(LONGITUDINAL)	Δ V = -2.0 mph @ 100.00 msec			3.70	62.38	6.89	15.88
	(LATERAL)	Δ V = 15.5 mph @ 100.00 msec			19.95	40.88	2.20	169.75
	(VERTICAL)				---	---Y	---	---Y
	(RESULTANT)					--- @	---Y	
2	RIGHT SILL AT REAR SEAT	68.1	24.6	9.5				
	(LONGITUDINAL)	Δ V = 0.3 mph @ 100.00 msec			4.41	64.00	4.83	25.50
	(LATERAL)	Δ V = 18.1 mph @ 100.00 msec			23.47	12.88	2.80	109.13
	(VERTICAL)				4.57	22.00	3.83	58.38
	(RESULTANT)					23.69 @	12.88	
3	REAR DECK OVER AXLE	35.3	0.0	12.8				
	(LONGITUDINAL)	Δ V = -2.5 mph @ 100.00 msec			2.26	112.38	4.58	56.25
	(LATERAL)	Δ V = 23.0 mph @ 100.00 msec			20.47	42.13	3.94	127.63
	(VERTICAL)				7.41	63.38	8.16	55.88
	(RESULTANT)					20.70 @	41.88	
4	LEFT SILL AT REAR SEAT	68.1	-24.6	8.5				
	(LATERAL)	Δ V = 16.6 mph @ 45.38 msec			53.01	12.25	10.98	34.25
5	LEFT SILL AT FRONT SEAT	98.0	-25.1	11.5				
	(LATERAL)	Δ V = 14.4 mph @ 43.50 msec			58.15	9.63	38.91	15.63
6	LEFT FRONT DOOR CENTERLINE	94.0	-24.8	23.6				
	(LATERAL)	Δ V = 26.3 mph @ 16.88 msec			200.08	12.50	42.05	23.13
7	RIGHT REAR COMPARTMENT	26.5	20.0	18.9				
	(LONGITUDINAL)				4.06	60.63	8.99	14.50
8	MIDREAR OF LEFT FRONT DOOR	90.0	-26.1	23.4				
	(LATERAL)	Δ V = 22.2 mph @ 23.13 msec			118.58	14.63	45.56	28.75
9	UPPER LEFT FRONT DOOR CENTERLINE	94.0	-25.2	33.0				
	(LATERAL)	Δ V = 26.7 mph @ 19.75 msec			124.34	11.38	81.85	27.00
10	MIDREAR OF LEFT REAR DOOR	61.8	-26.5	17.5				
	(LATERAL)	Δ V = 21.1 mph @ 14.38 msec			125.27	14.63	85.73	29.00
11	UPPER REAR OF LEFT REAR DOOR	61.8	-26.5	27.0				
	(LATERAL)	Δ V = 24.3 mph @ 22.75 msec			151.12	21.75	106.59	31.75

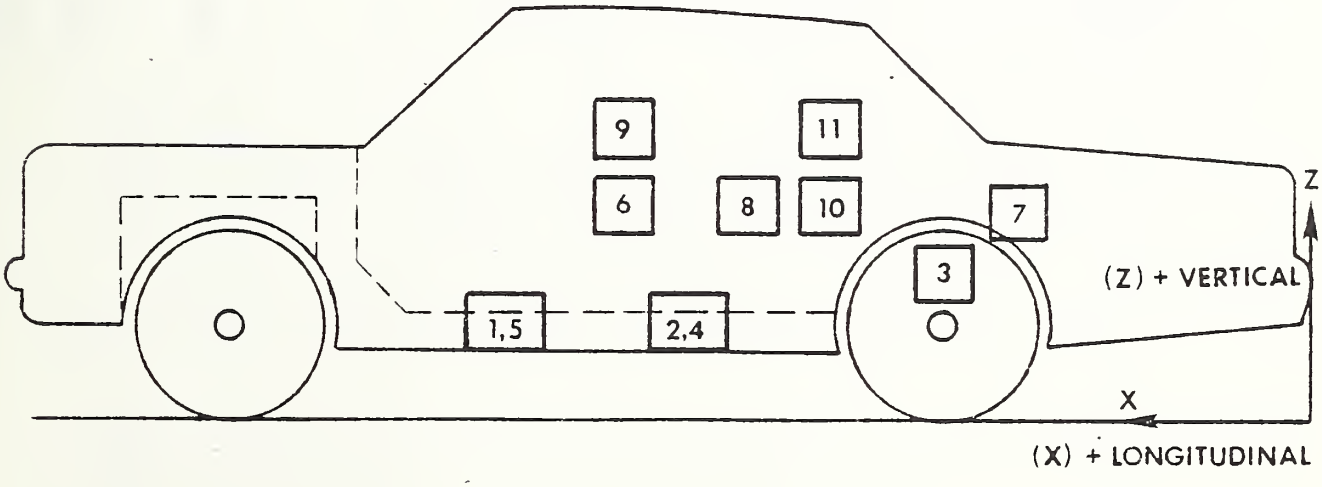
* Reference: X - Rear Bumper (+ Forward), Y - Vehicle Centerline (+ To Right), Z - Ground Level (+ Up)

All measurements of accelerometer locations in inches.

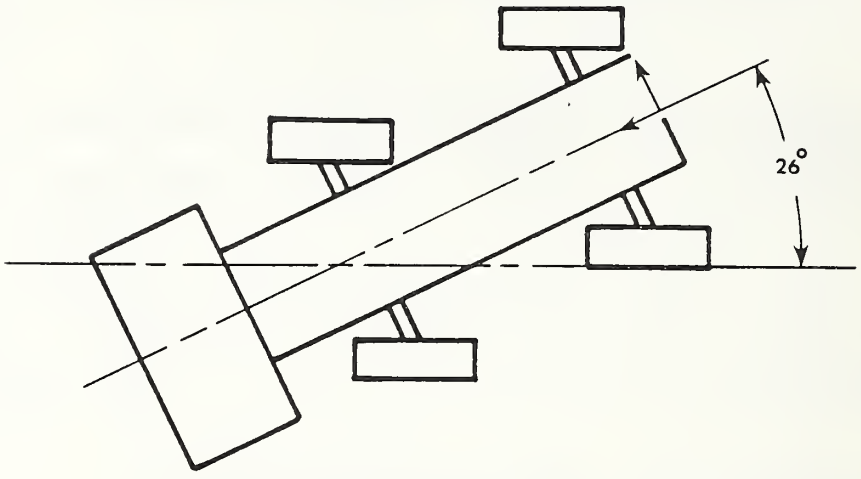
Y See TEST ANOMALIES

VEHICLE ACCELEROMETER LOCATIONS





MOVING BARRIER ACCELEROMETER LOCATIONS AND DATA SUMMARY



NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION MAX (g)	POSITIVE DIRECTION TIME (msec)	NEGATIVE DIRECTION MAX (g)	NEGATIVE DIRECTION TIME (msec)
1	CENTER OF GRAVITY	73.5	0.0	12.8				
	(LONGITUDINAL)	Δ V = -15.8 mph @ 100.00 msec			0.92	135.13	16.16	34.75
	(LATERAL)	Δ V = -3.6 mph @ 100.00 msec			1.82	75.75	7.19	34.00
	(VERTICAL)				5.53	55.13	3.44	2.00
	(RESULTANT)					17.79 @ 34.75		
2	REAR FRAME MEMBER	19.4	-18.5	12.7				
	(LONGITUDINAL)	Δ V = -16.1 mph @ 100.00 msec			1.60	148.00	19.23	34.13
	(LATERAL)	Δ V = 0.4 mph @ 100.00 msec			3.80	32.38	2.09	140.00

* Reference: X - Rear Most Point of Frame (+ To Forward), Y - Barrier Centerline (+ To Right), Z - Ground Level (+ To Up)

All measurements of accelerometer locations in inches.

CAMERA INFORMATION

CAMERA NO.	LOCATION	TYPE	LENS (mm)	SPEED (fps)	PURPOSE OF CAMERA DATA
1	Onboard MDB - Tight	Photosonic 1B	25	500	Closeup of impact point
2	Onboard MDB - Wide	Photosonic 1B	13	500	Dummy kinematics
3	Overhead - Tight	Photosonic 1B	25	350	Closeup of impact point
4	Overhead - Wide	Photosonic 1B	8	412	Vehicle dynamics
5	Ground Level - Right	Photosonic 1B	25	502	Overall view
6	Ground Level - Left	Photosonic 1B	17	500	Overall View
7	Onboard Windshield	Photosonic 1B	8	797	Driver kinematics - front view
8	Onboard Roof	Photosonic 1B	8	800	Door/Driver contact velocity
9	Onboard Driver	Photosonic 1B	8	800	Driver kinematics
10	Onboard Passenger	Photosonic 1B	8	797	Passenger kinematics

LOCATIONS OF OFFBOARD HIGH SPEED CAMERAS

CAMERA NO.	X	Y	Z
1	0	0	25'
2	0	0	25'
5	24'10"	58'8"	45"
6	-20'11"	-13'	45"

Origin of Coordinate System is Point of Impact

+X = Forward with Respect to Striking Vehicle's Velocity Vector
+Y = Rightward with Respect to Striking Vehicle's Velocity Vector
+Z = Upward with Respect to Striking Vehicle's Velocity Vector

NON-GOVERNMENT FURNISHED TRANSDUCER INFORMATION

PARAMETER BEING MEASURED	TYPE OF TRANSDUCER	MODEL NUMBER	SERIAL NUMBER	MFGR.	DATE OF LAST CALIBRATION	SENSITIVITY	DESIRED FULL SCALE (ENGR. UNITS)
BCGXG	Accel	4-202-0001	18851	Bell Howell	12/10/84	.242 MV/G	100 G
BCGYG	Accel	4-202-0001	18859	Bell Howell	12/10/84	.239 MV/G	100 G
BCGZG	Accel	4-202-0001	18847	Bell Howell	12/10/84	.246 MV/G	100 G
BRCXG	Accel	4-202-0001	18240	Bell Howell	11/8/84	.239 MV/G	100 G
BRCYG	Accel	4-202-0001	19022	Bell Howell	11/8/84	.220 MV/G	100 G

All dummy and struck vehicle accelerometers were Government Furnished Equipment and were Endevco 2264 Accelerometers.

APPENDIX A

PHOTOGRAPHS

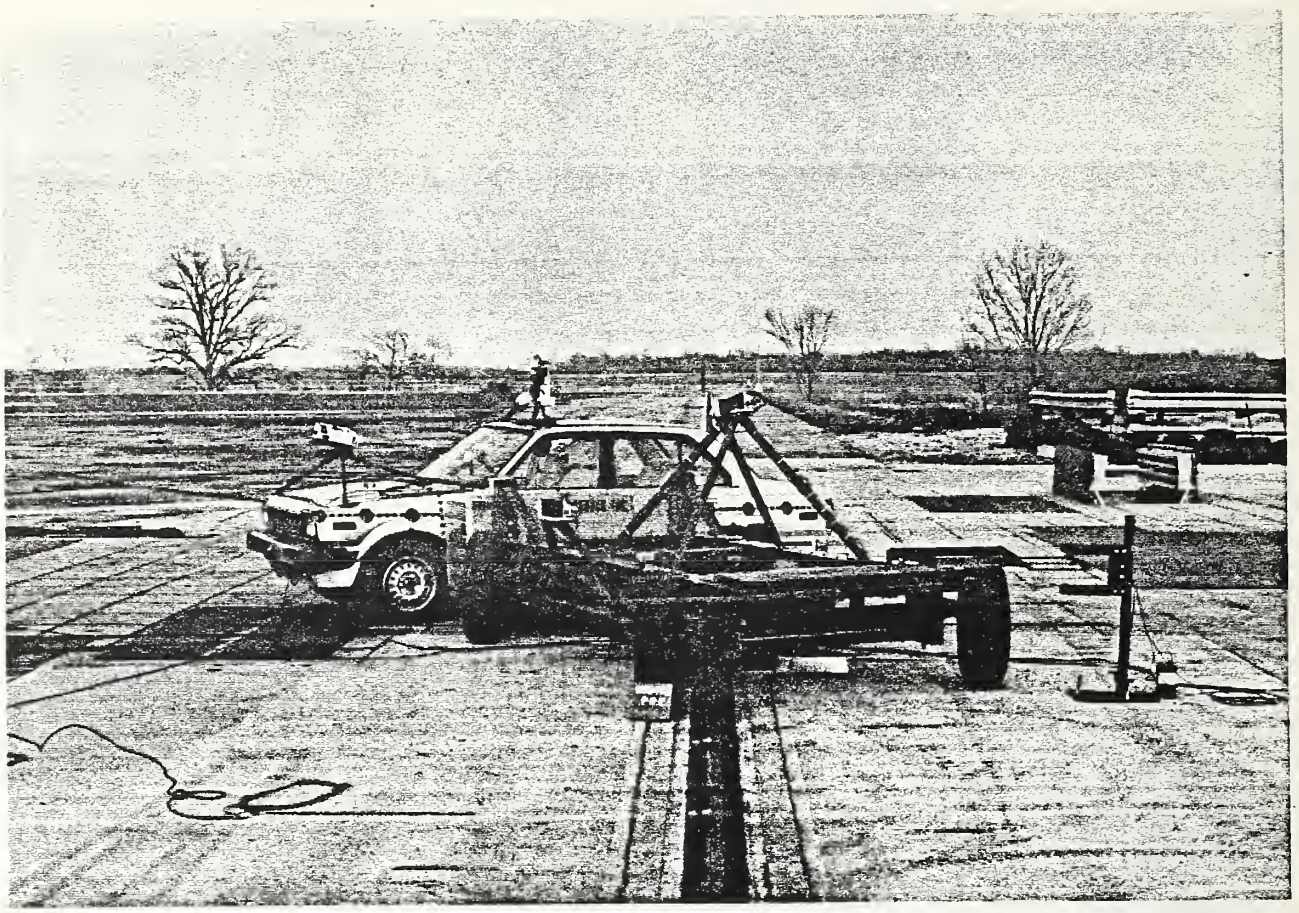


Figure A-1. PRE-TEST OVERALL - VIEW 1

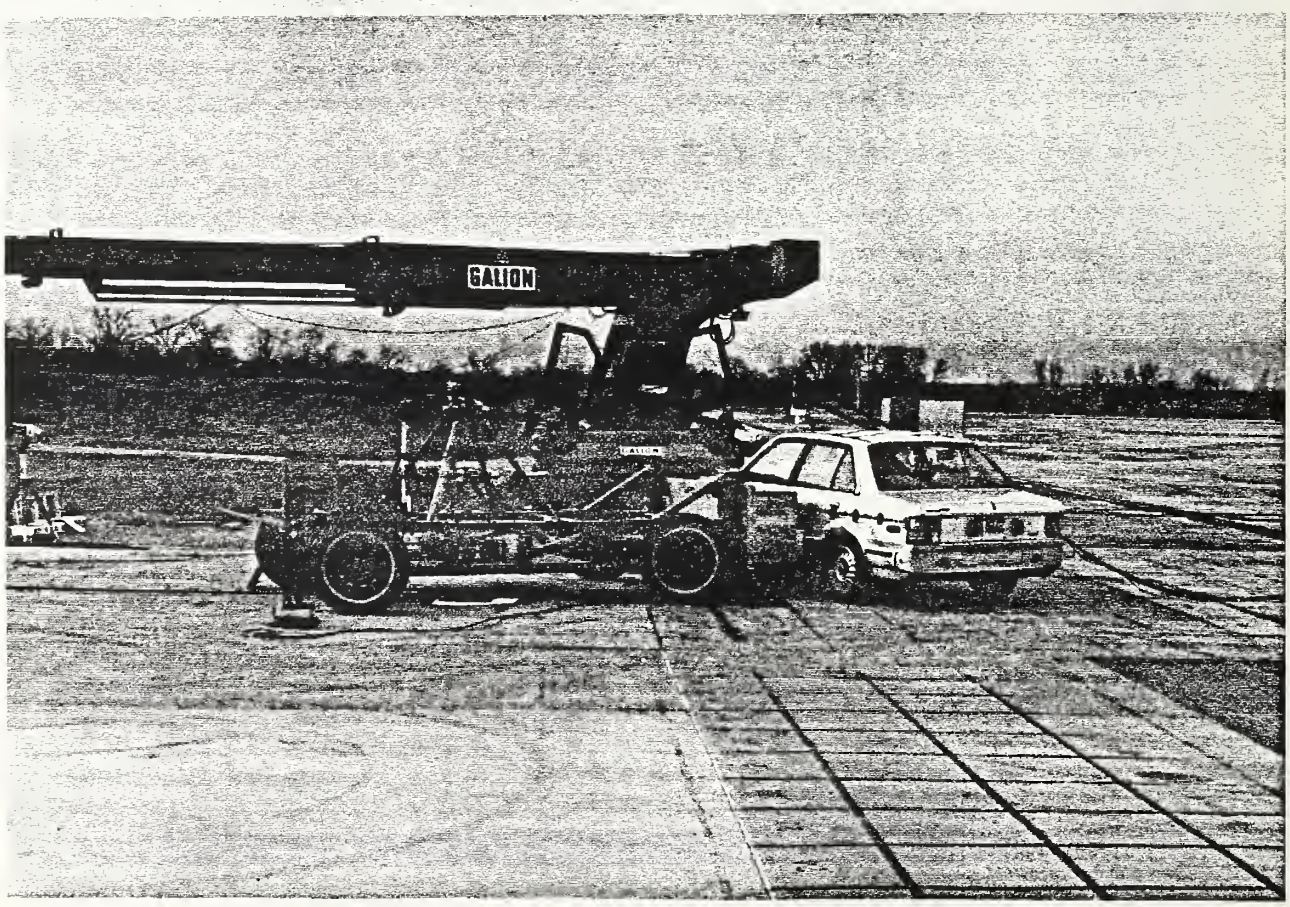


Figure A-2. PRE-TEST OVERALL - VIEW 2

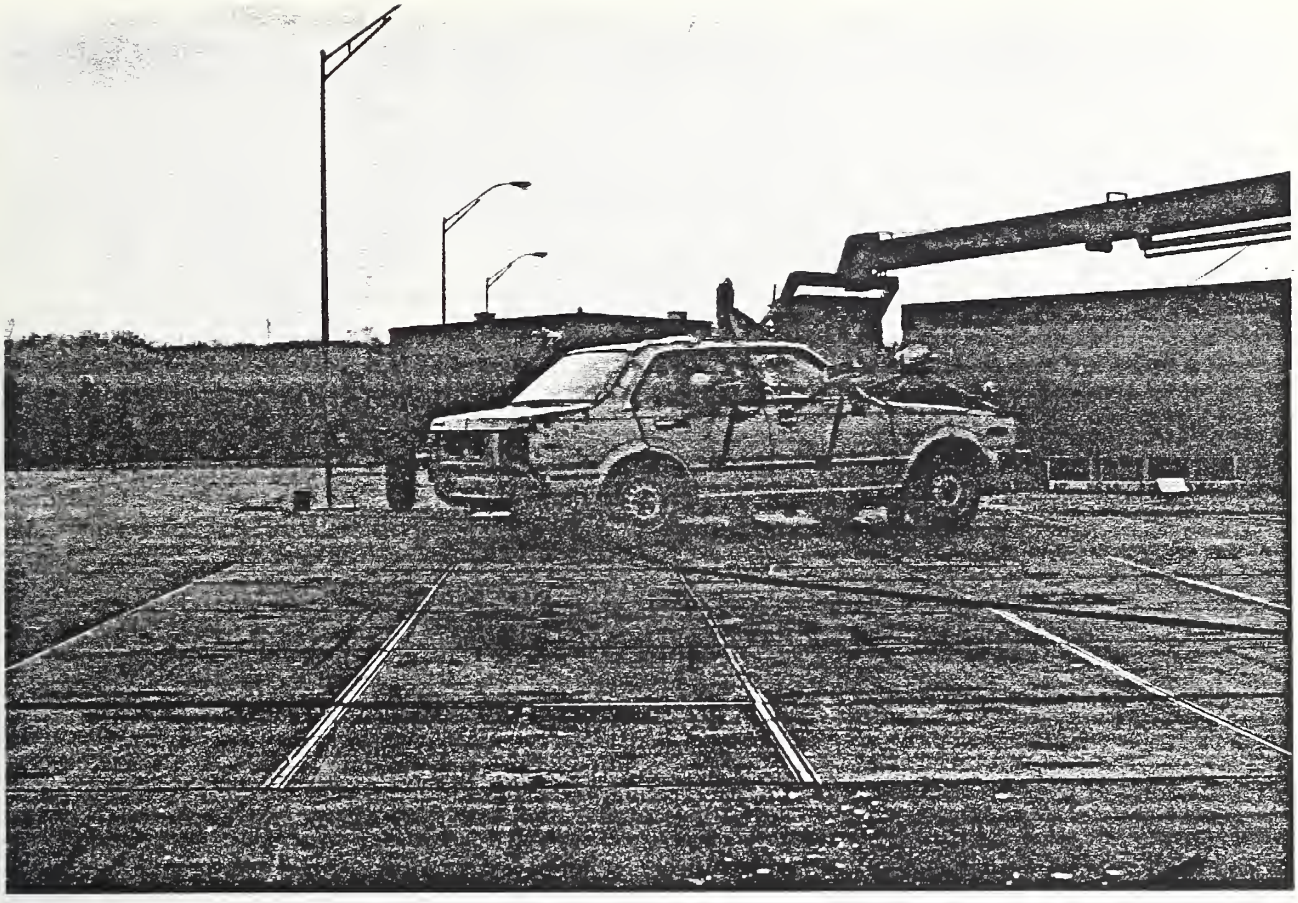


Figure A-3. PRE-TEST OVERALL - VIEW 3

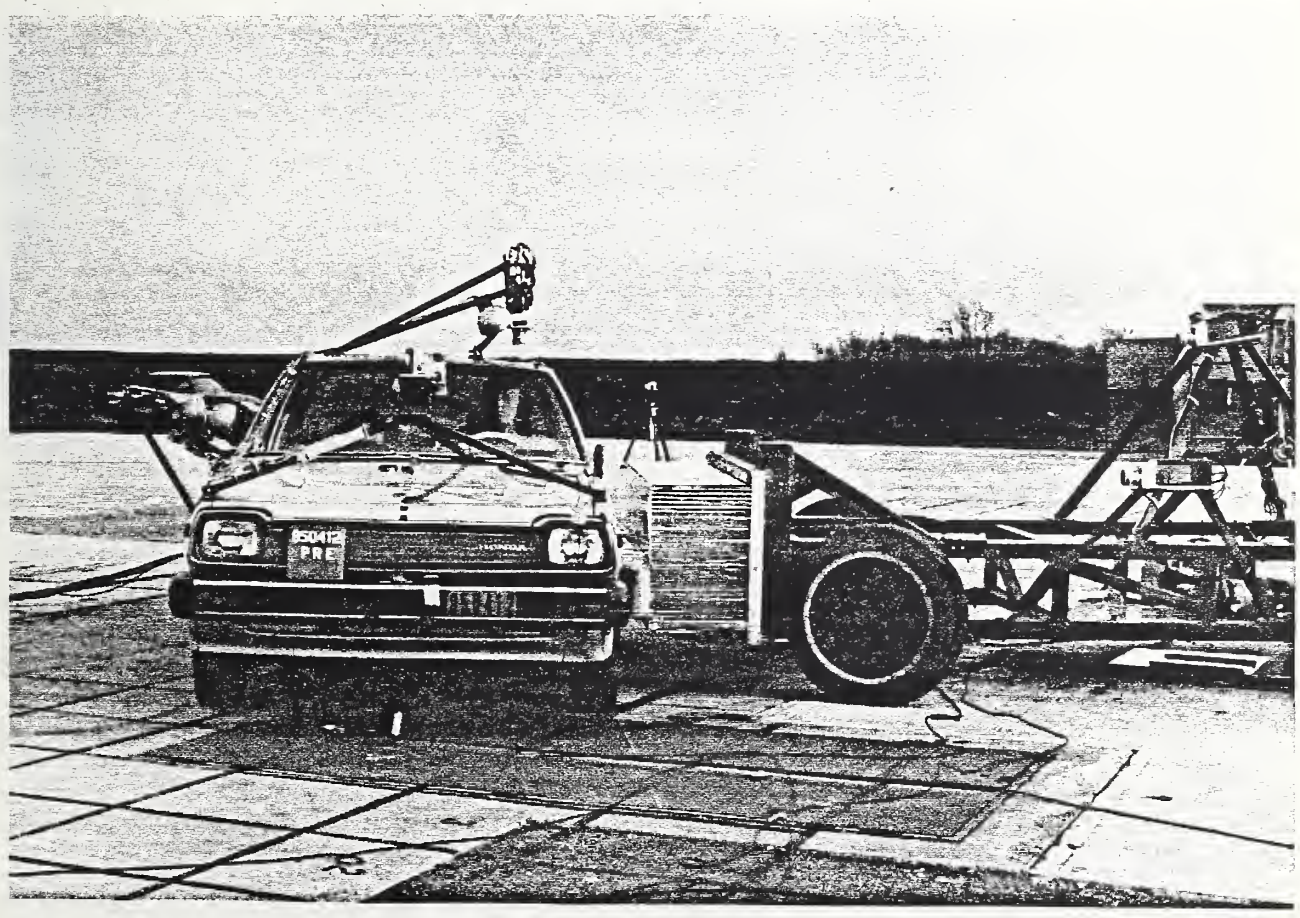


Figure A-4. PRE-TEST OVERALL - VIEW 4

Figure A-5. PRE-TEST CLOSEUP - VIEW 1

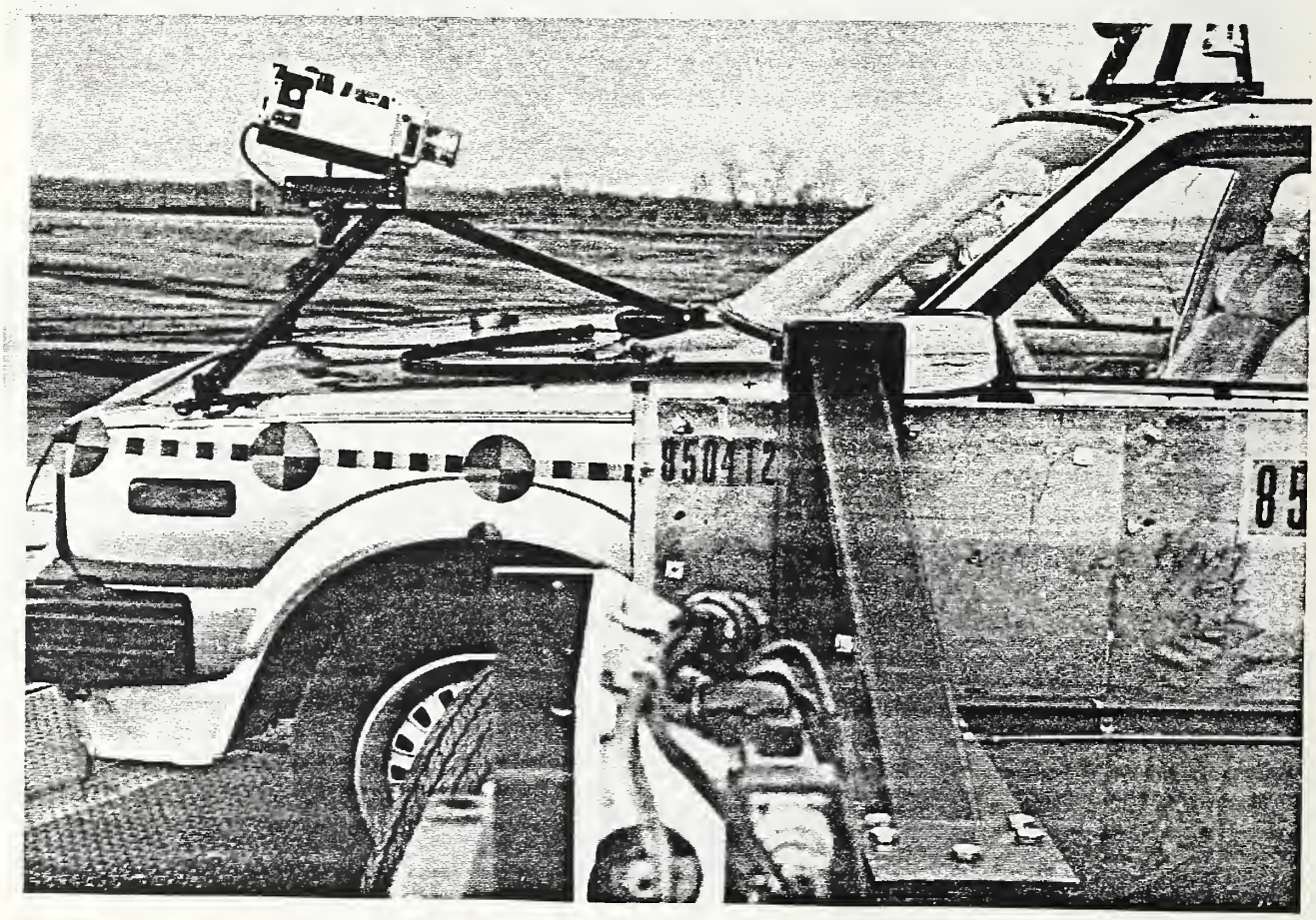


Figure A-6. PRE-TEST CLOSEUP - VIEW 2

Figure A-7. PRE-TEST DRIVER DUMMY VIEW

Figure A-8. PRE-TEST PASSENGER DUMMY VIEW

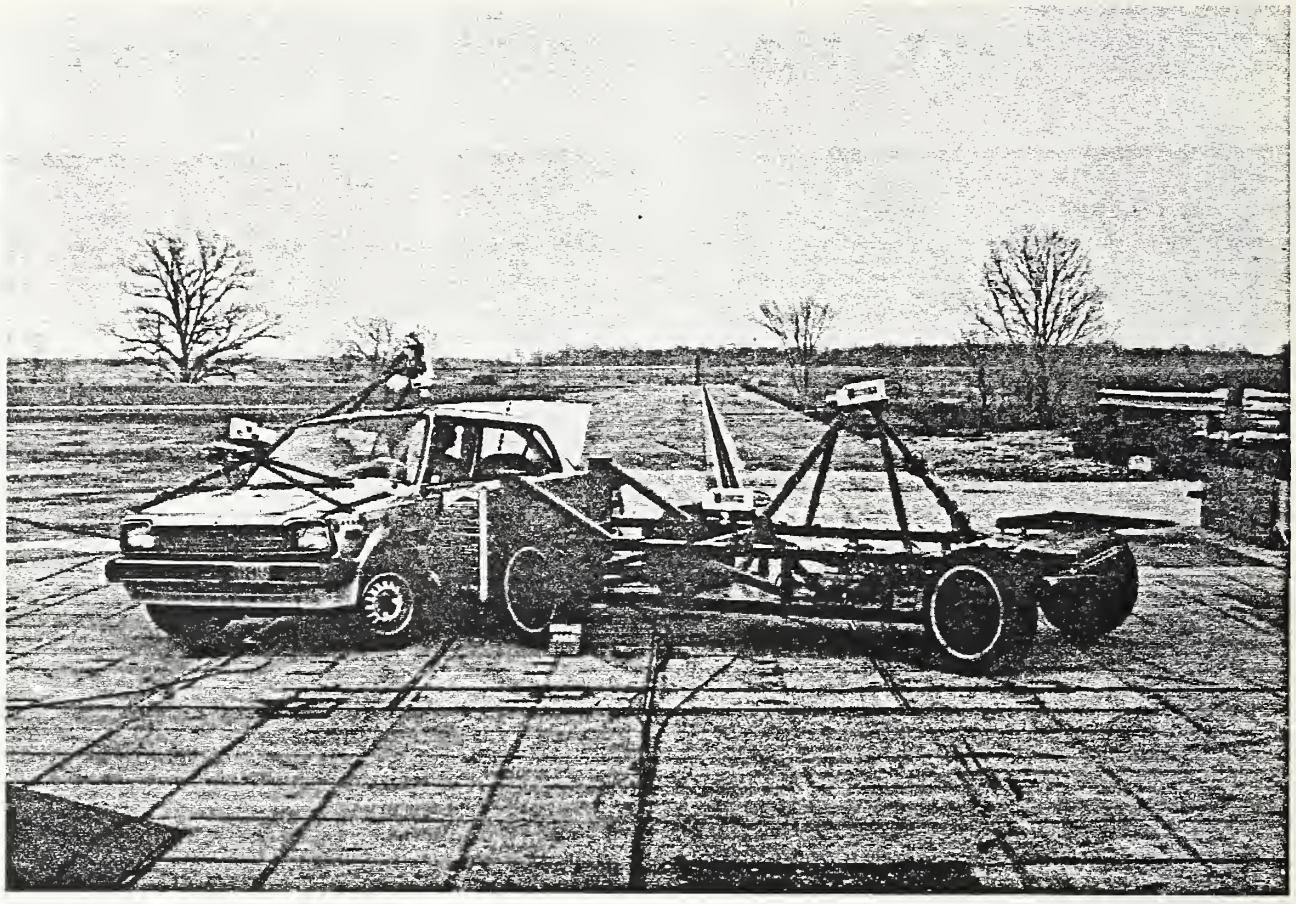


Figure A-9. POST-TEST OVERALL - VIEW 1

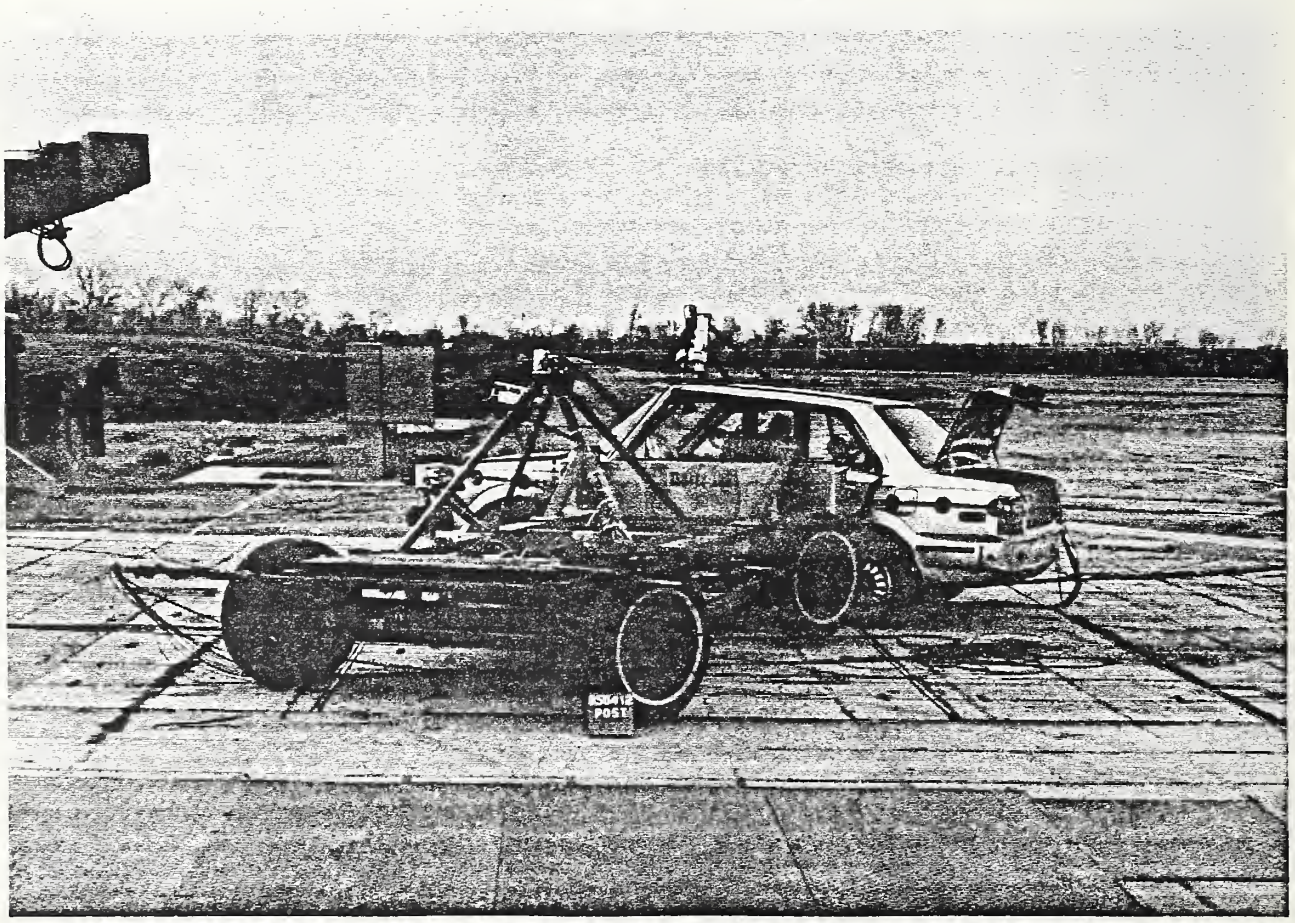


Figure A-10. POST-TEST OVERALL - VIEW 2

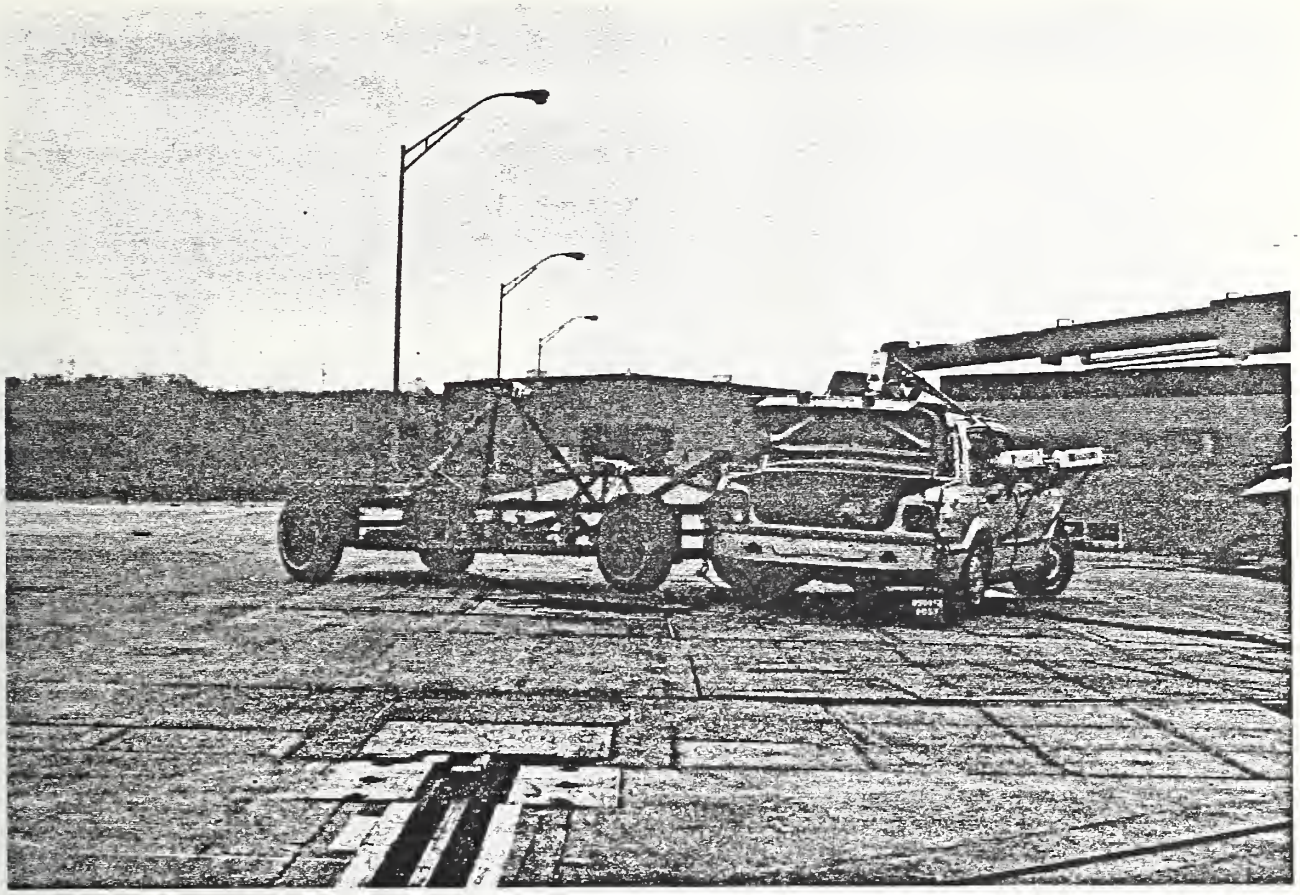


Figure A-11. POST-TEST OVERALL - VIEW 3

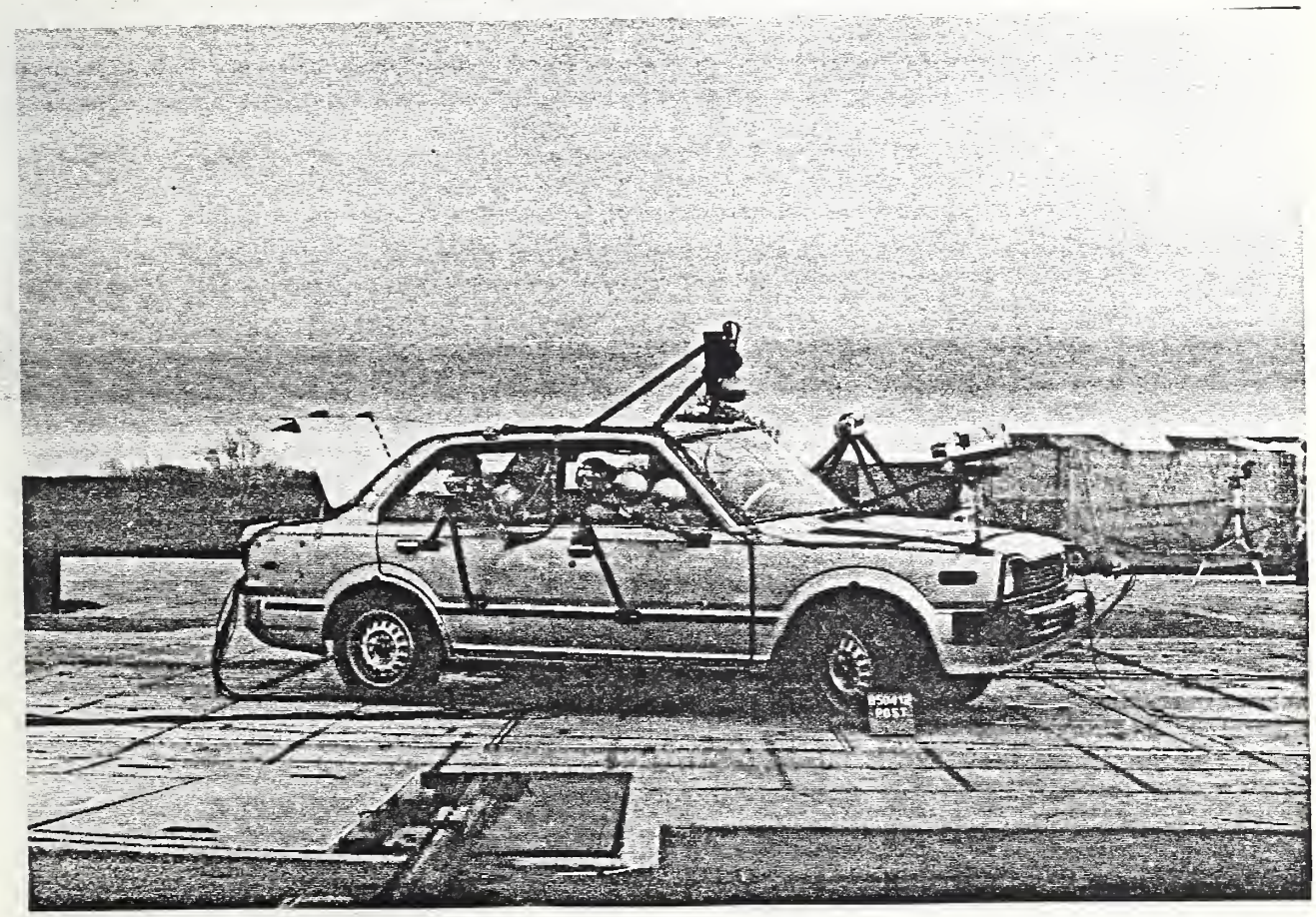


Figure A-12. POST-TEST OVERALL - VIEW 4

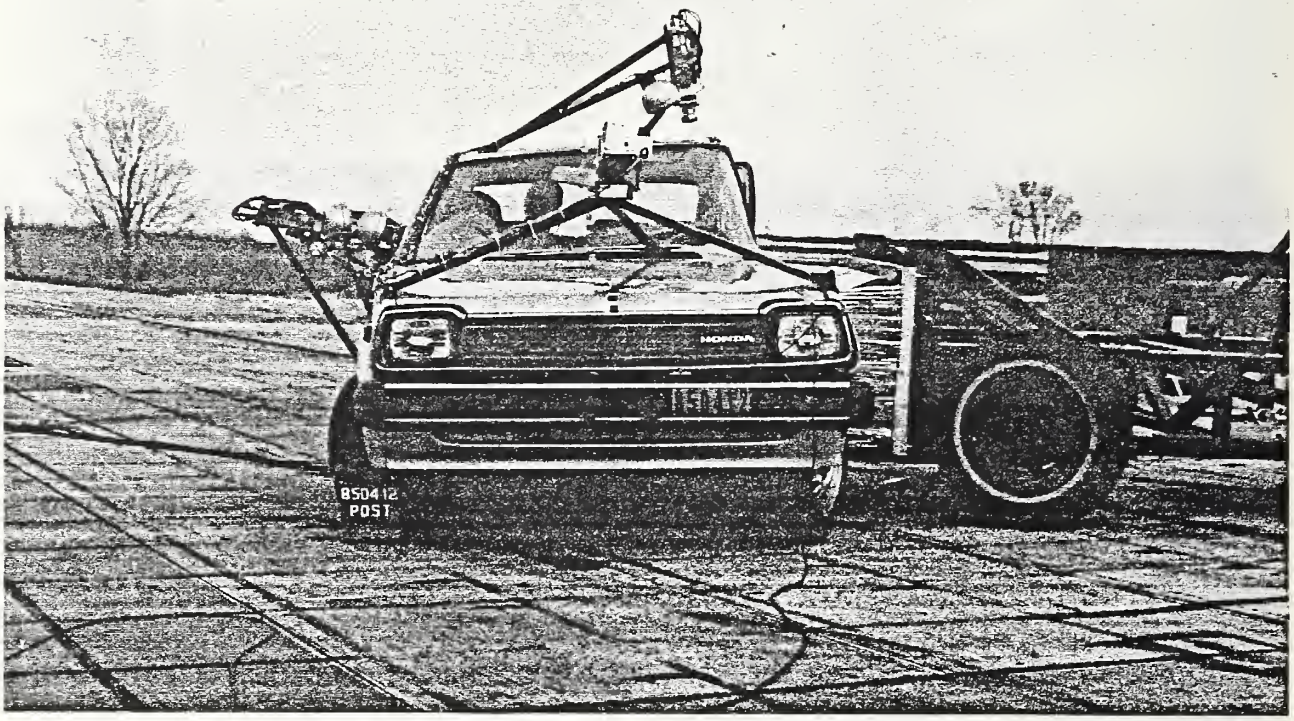


Figure A-13. POST-TEST CLOSEUP VIEW

Figure A-14. POST-TEST DRIVER DUMMY VIEW

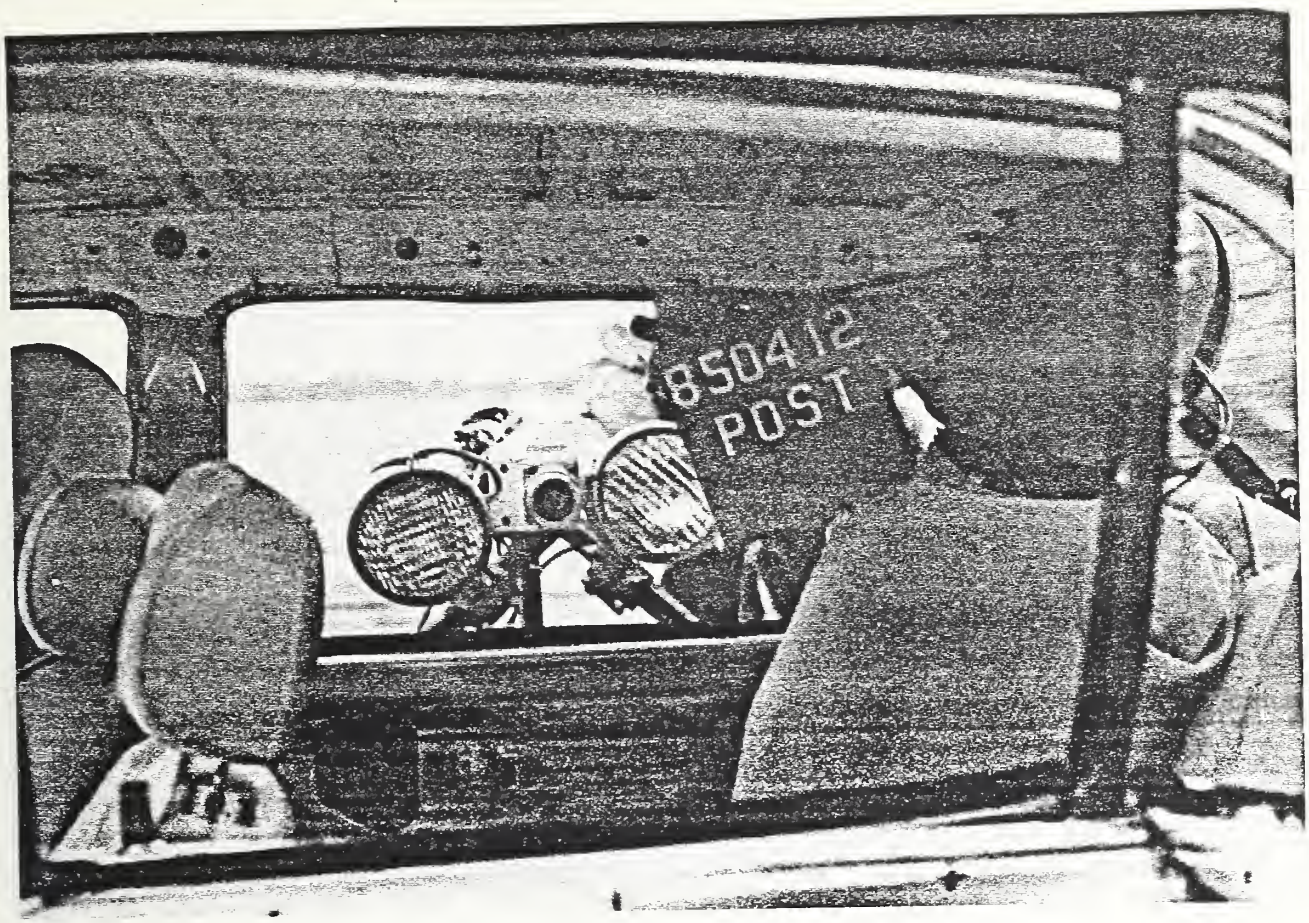


Figure A-15. POST-TEST PASSENGER DUMMY VIEW

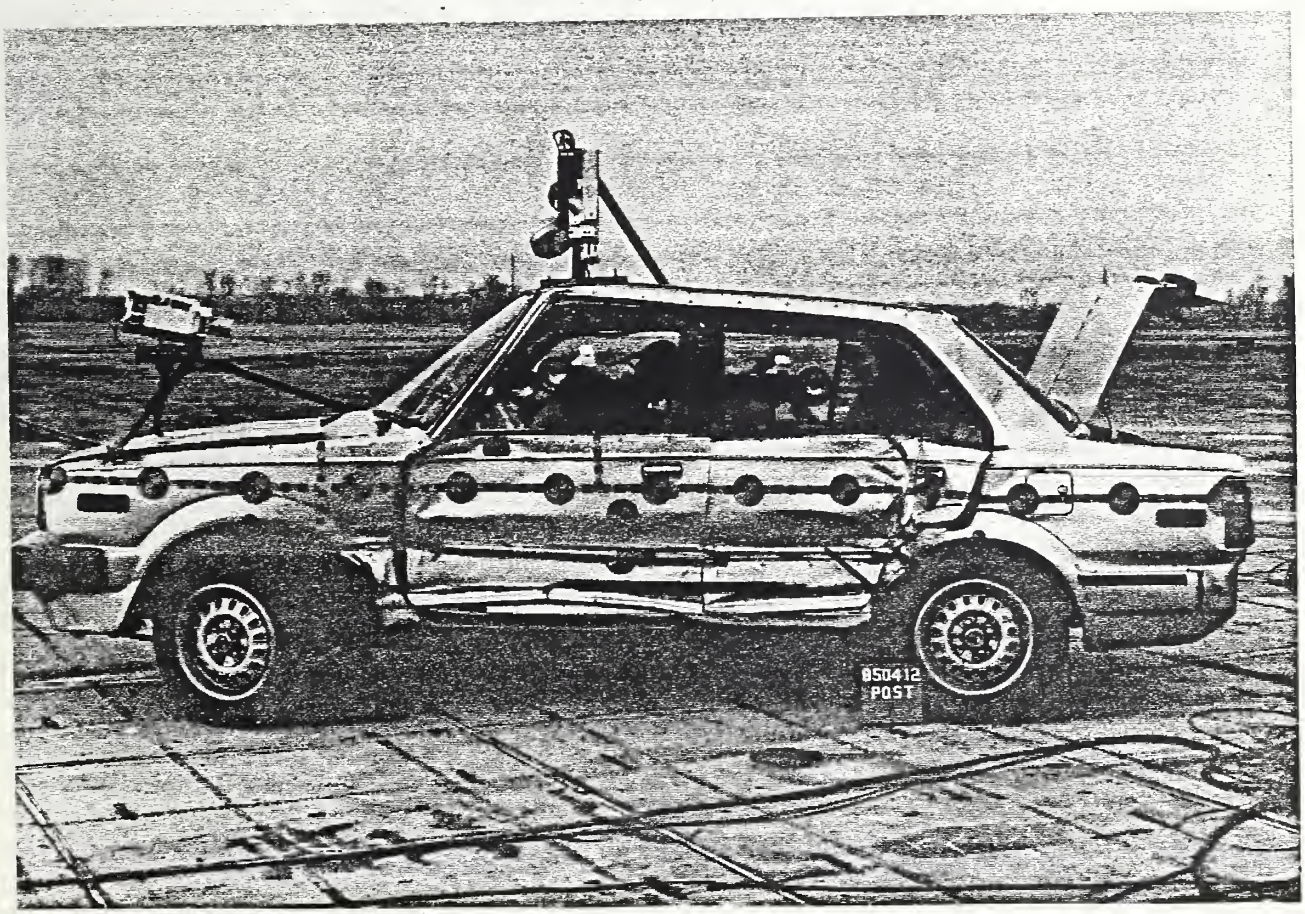


Figure A-16. POST-TEST VEHICLE DAMAGE - VIEW 1

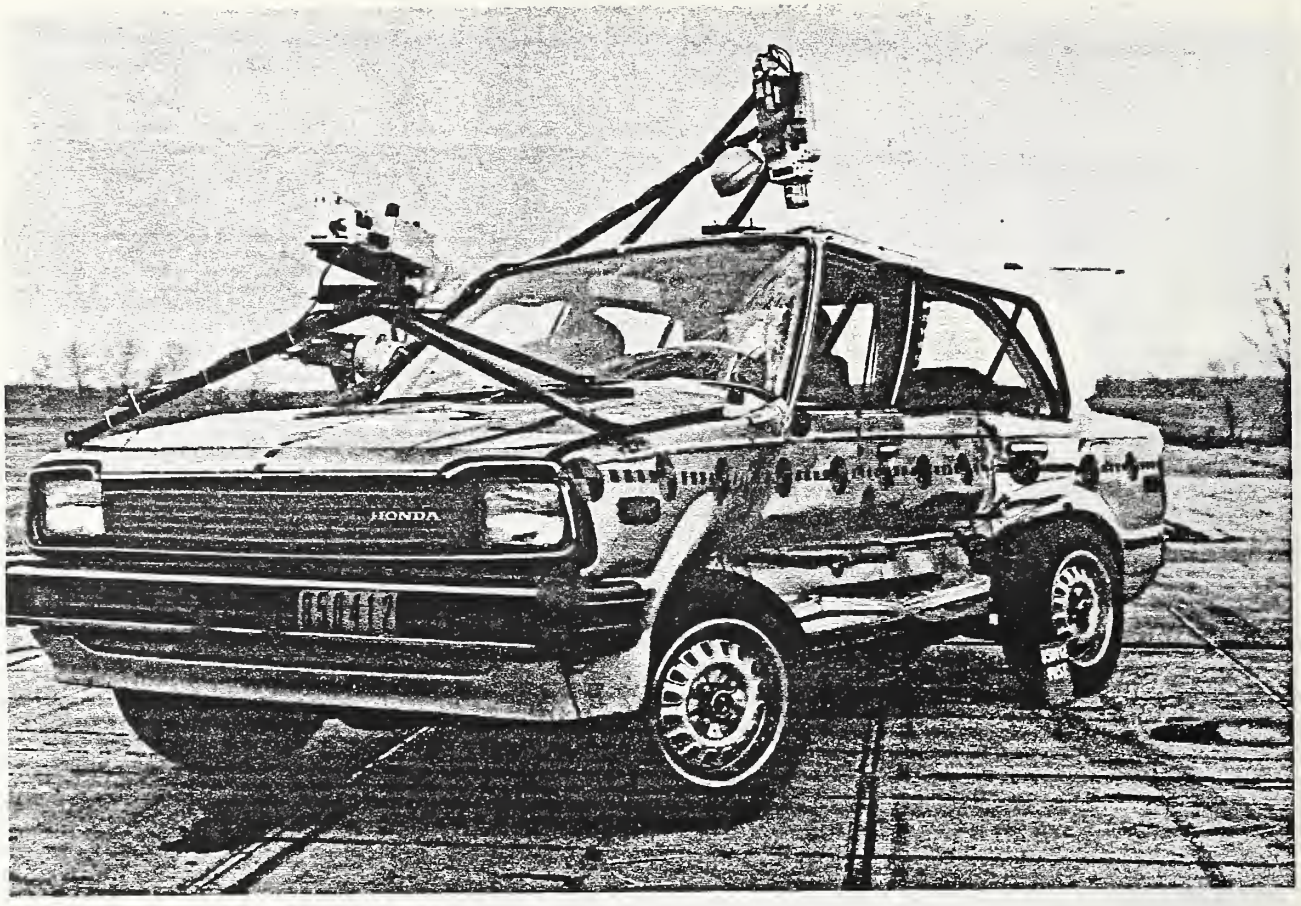


Figure A-17. POST-TEST VEHICLE DAMAGE - VIEW 2

Figure A-18. POST-TEST VEHICLE DAMAGE - VIEW 3

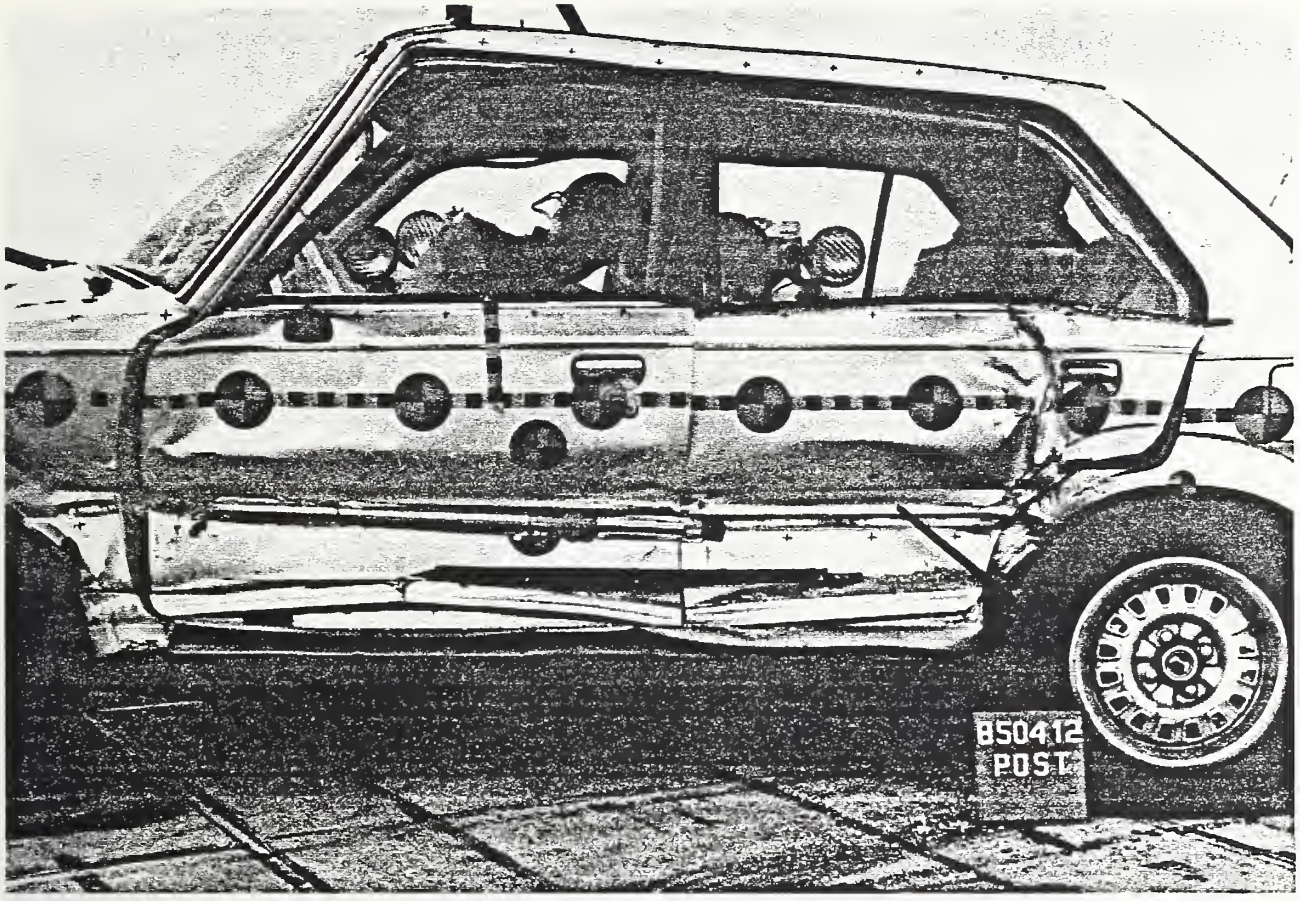


Figure A-19. POST-TEST VEHICLE DAMAGE - VIEW 4

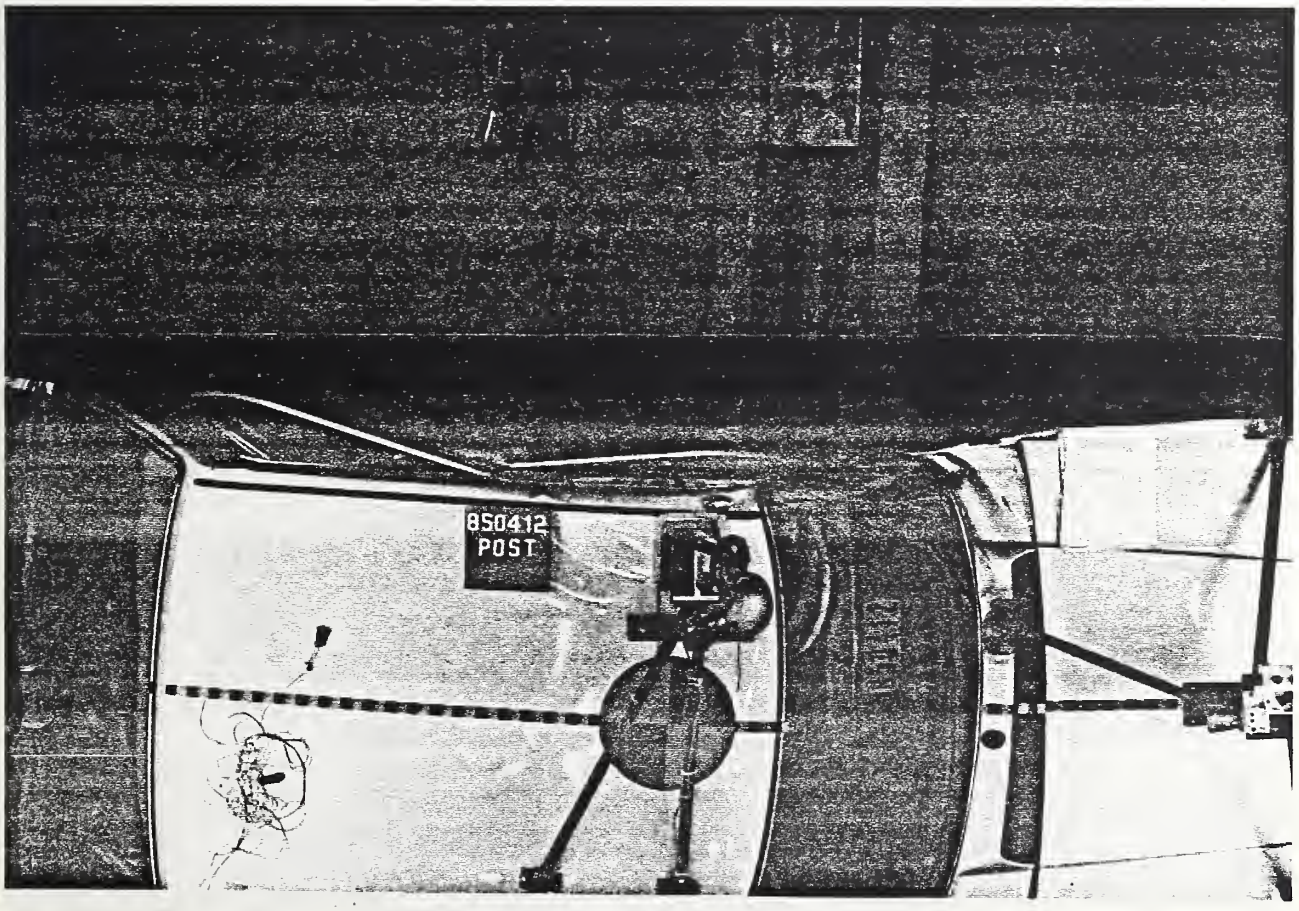


Figure A-20. POST-TEST OVERHEAD VIEW

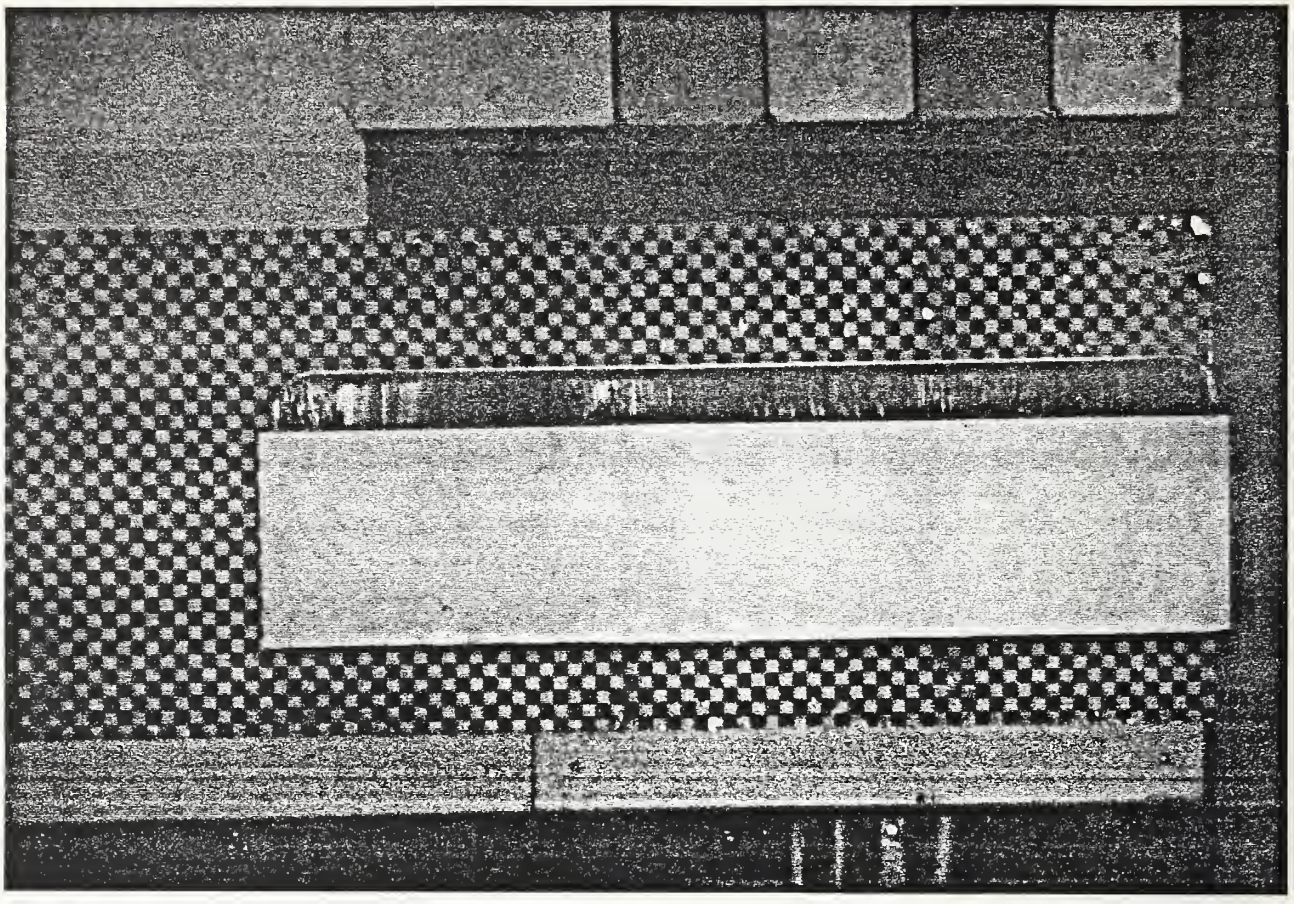


Figure A-21. PRE-TEST MDB FACE - VIEW 1

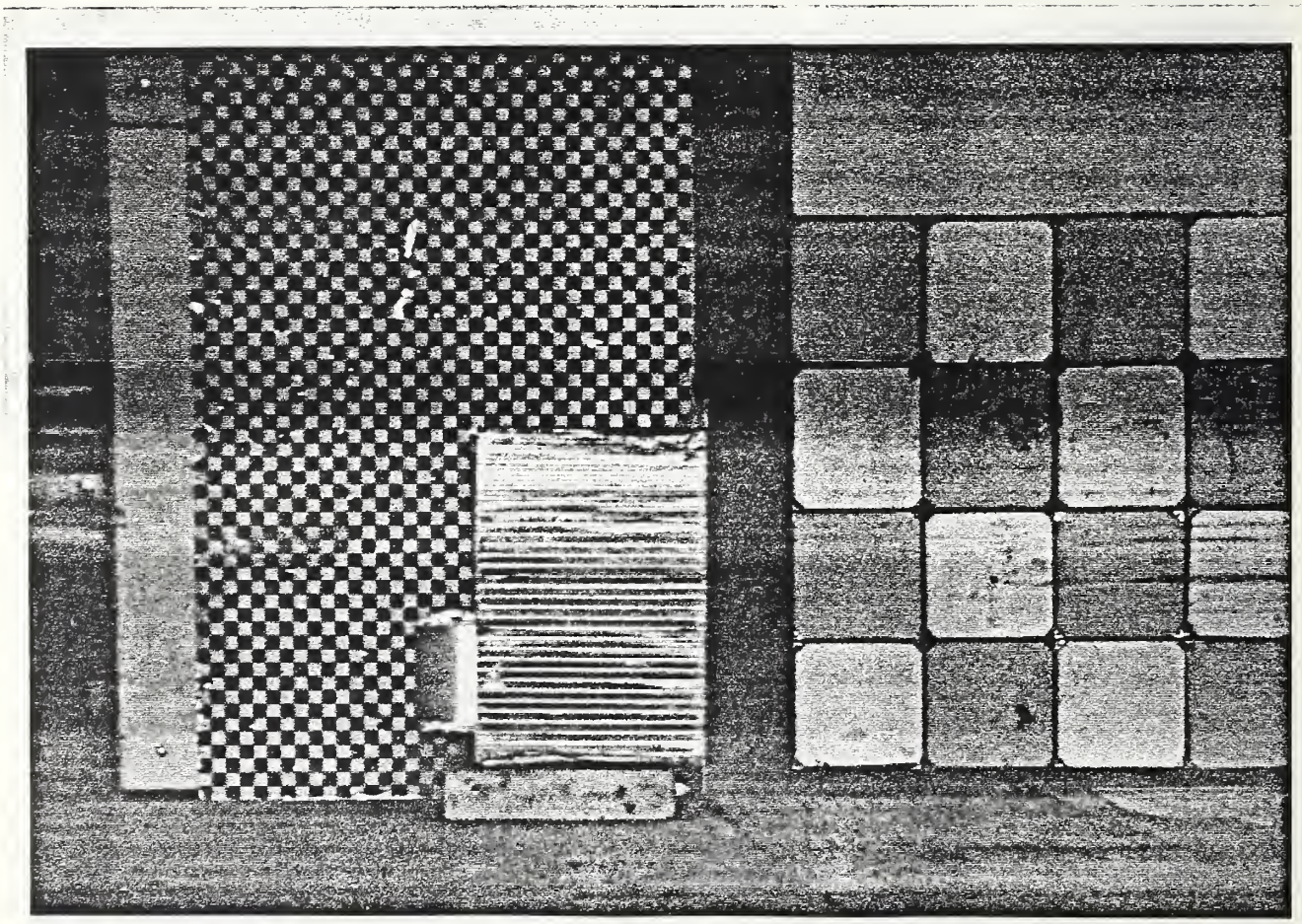


Figure A-22. PRE-TEST MDB FACE - VIEW 2

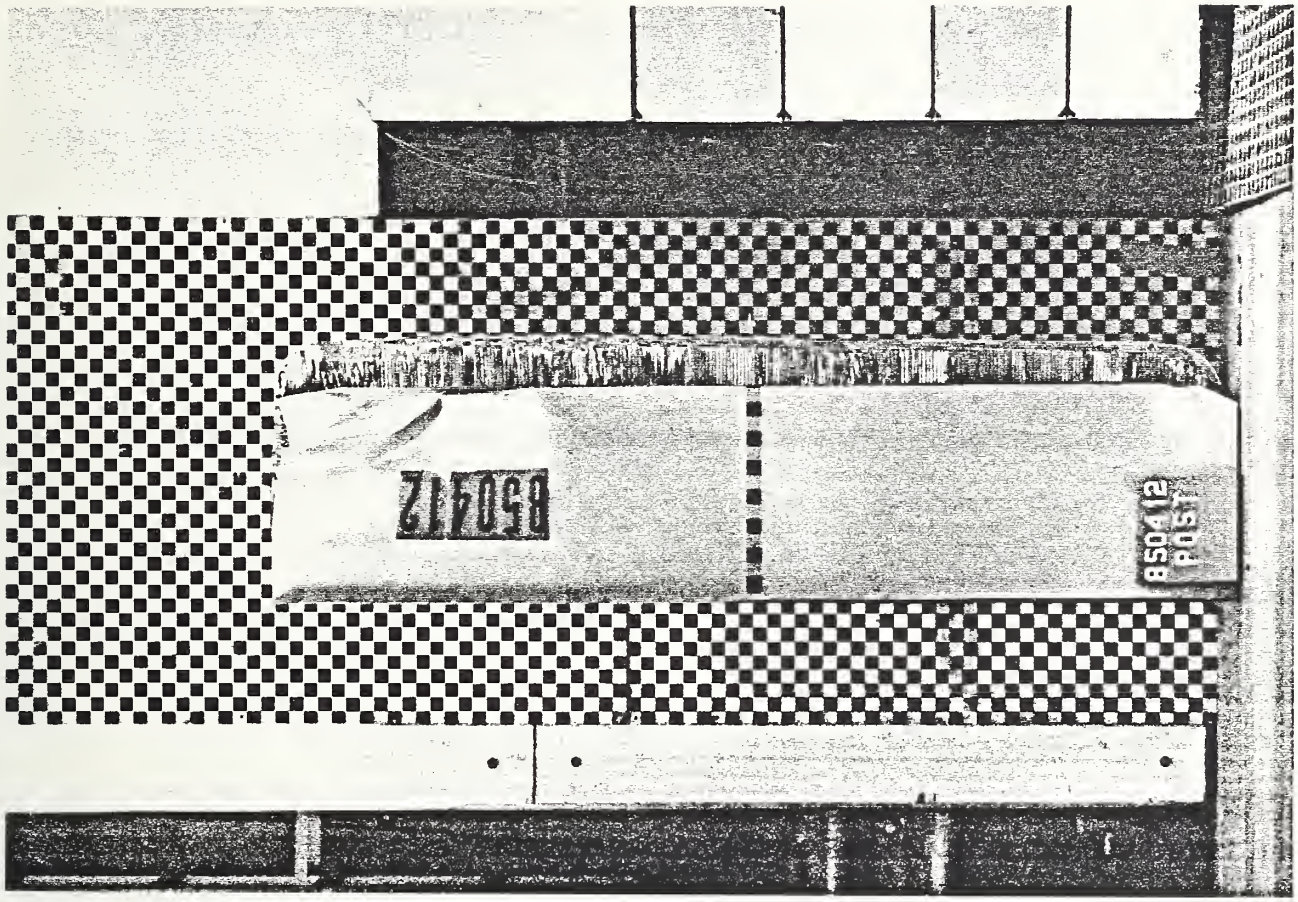


Figure A-23. POST-TEST MDB FACE - VIEW 1

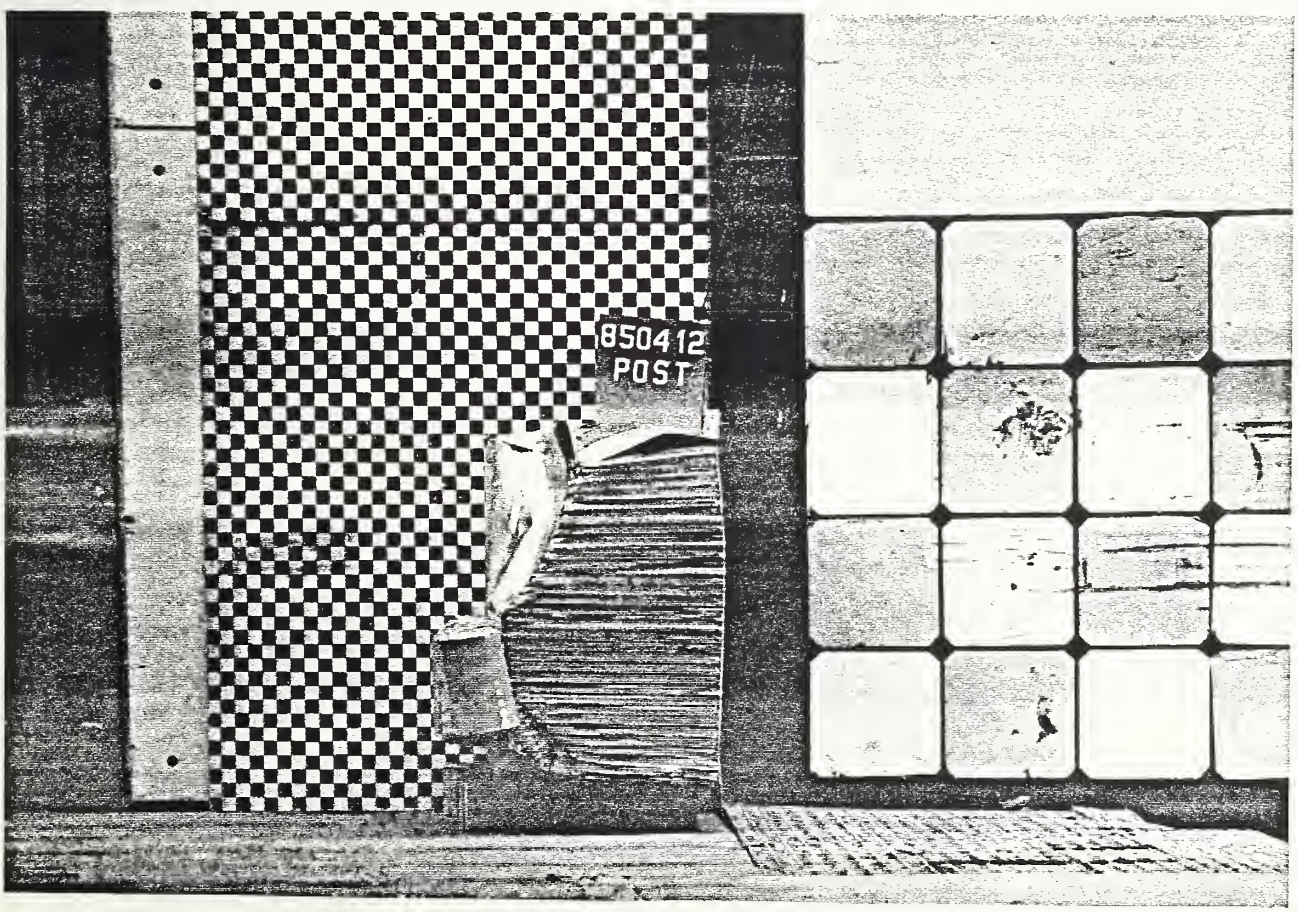
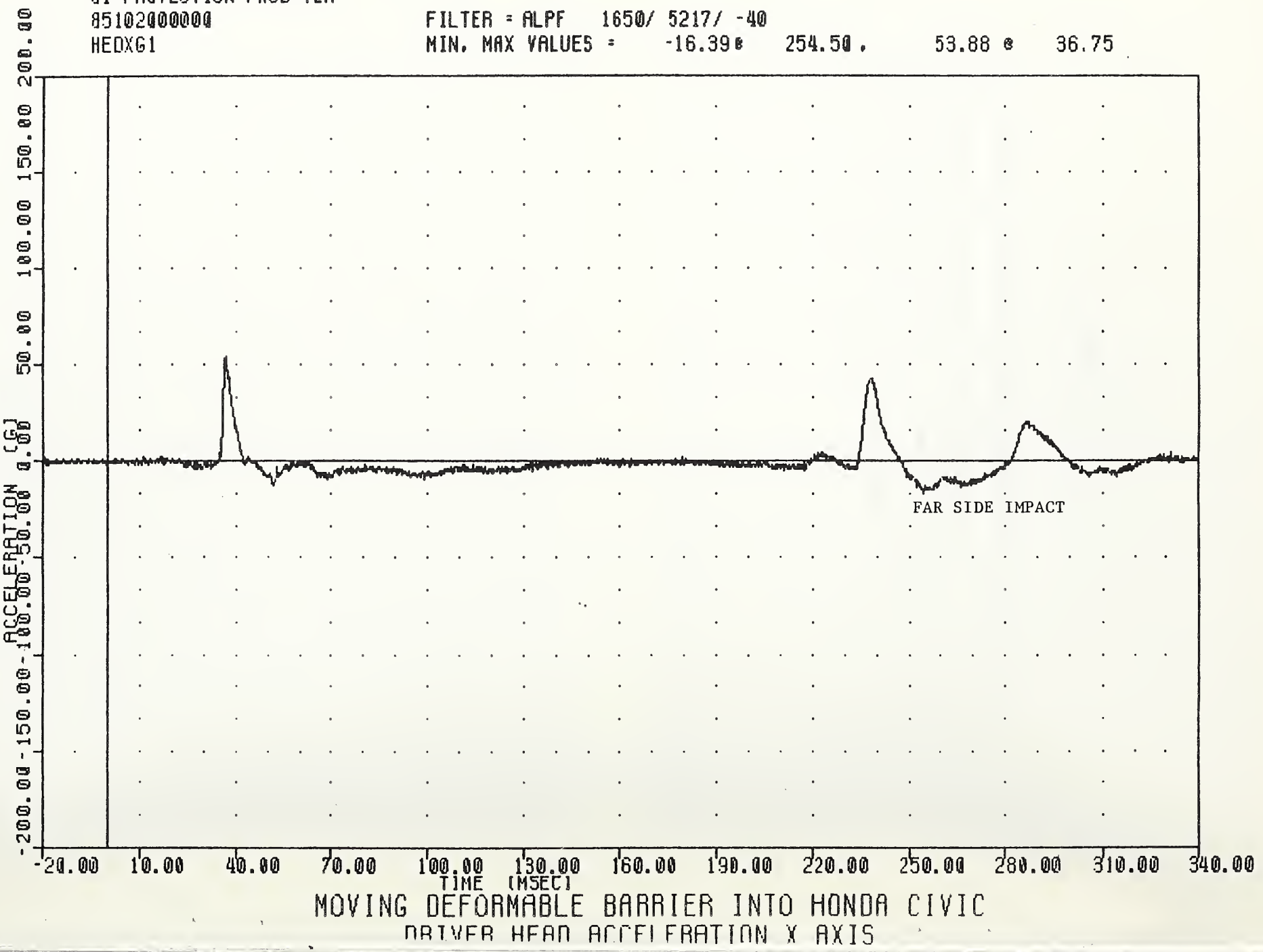


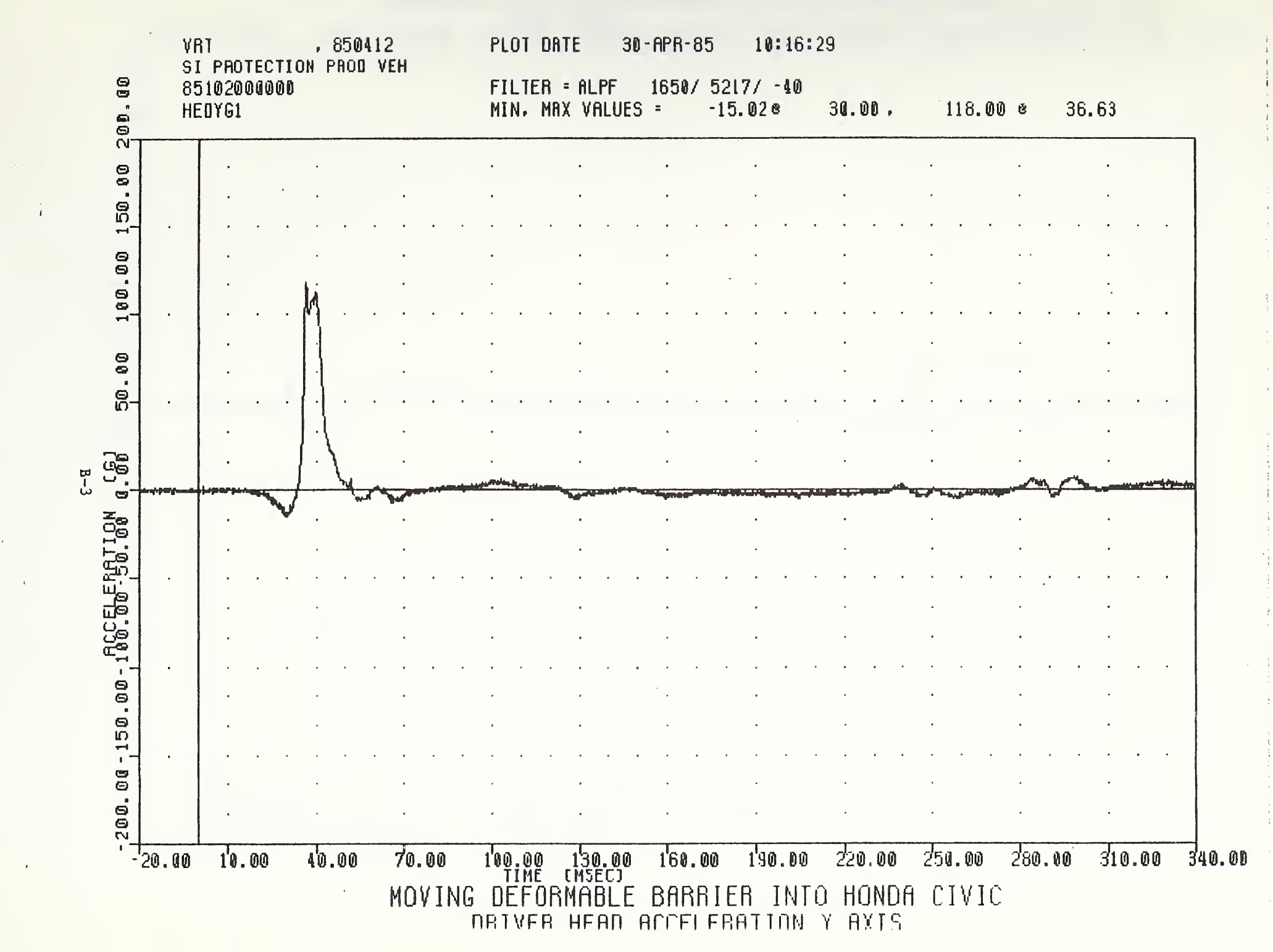
Figure A-24. POST-TEST MDB FACE - VIEW 2

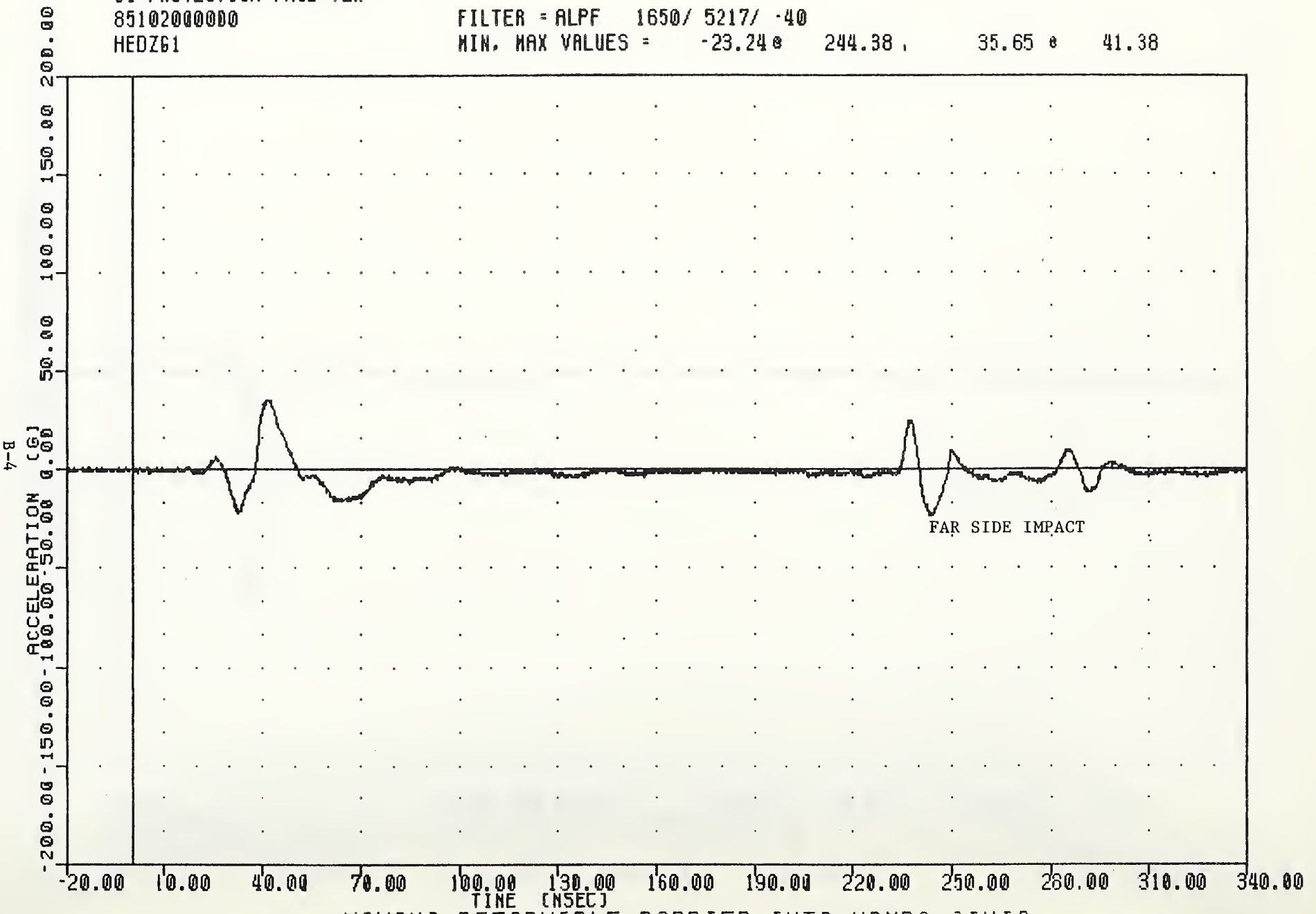
APPENDIX B

DATA PLOT PRESENTATION

Data plots generated from the crash test data are presented on the following pages. All data are recorded on magnetic tape for inclusion in the NHTSA crash test data base system. All data were filtered according to SAE J211, except that dummy thorax data were filtered using the HSRI filter.

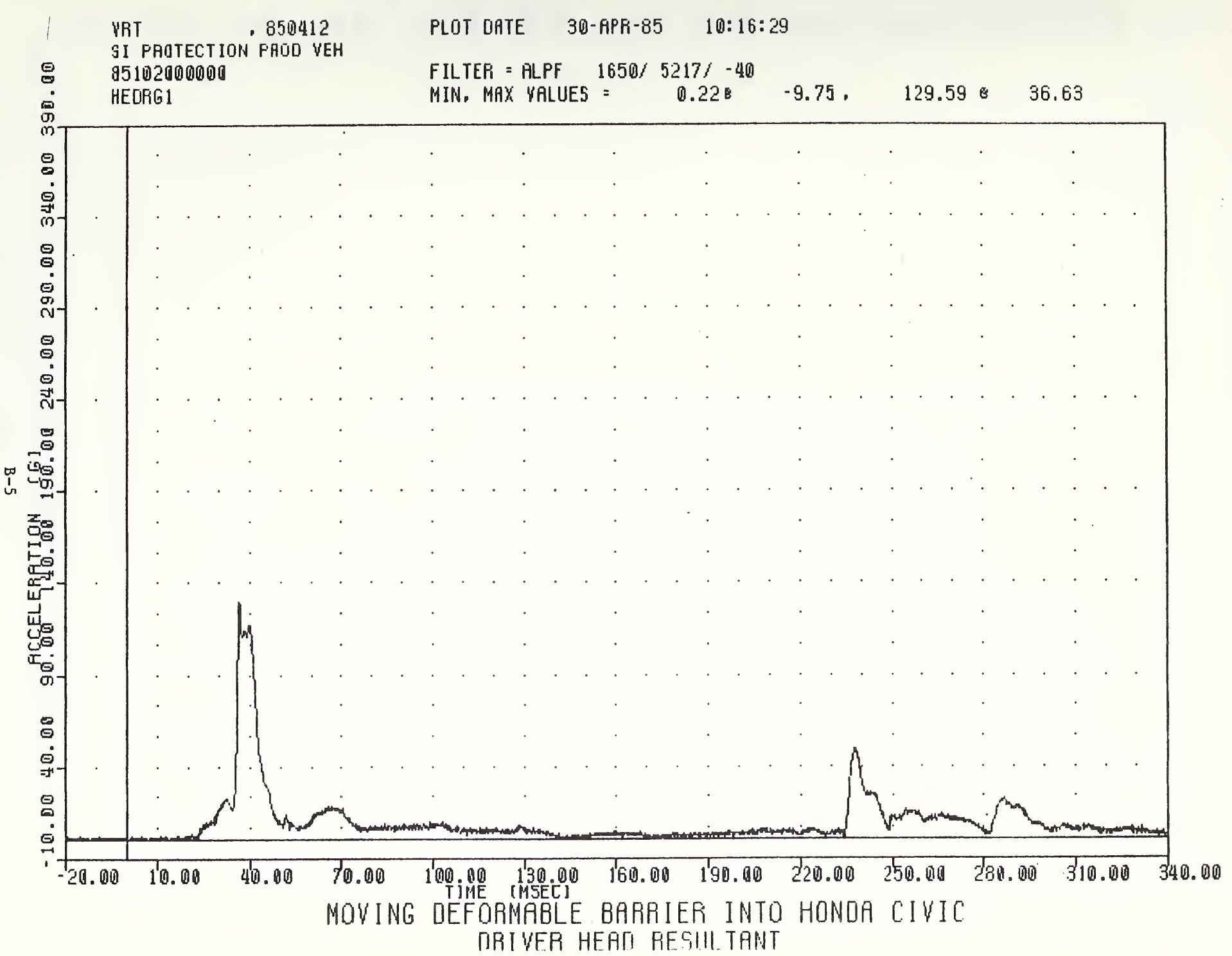

VRT , 850412
SI PROTECTION PROD VEH
851020000004
HEDXG1
PLOT DATE 30-APR-85 10:16:29
FILTER = ALPF 1650/ 5217/ -40
MIN, MAX VALUES = -16.39 @ 254.50 , 53.88 @ 36.75
FAR SIDE IMPACT
ACCELERATION (G)
-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER HEAD ACCELERATION X AXIS


VRT , 850412
SI PROTECTION PROD VEH
85102000000
HEDYG1
PLOT DATE 30-APR-85 10:16:29
FILTER = ALPF 1650/ 5217/ -40
MIN, MAX VALUES = -15.02 @ 30.00 , 118.00 @ 36.63
ACCELERATION (G)
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER HEAD ACCELERATION Y AXIS

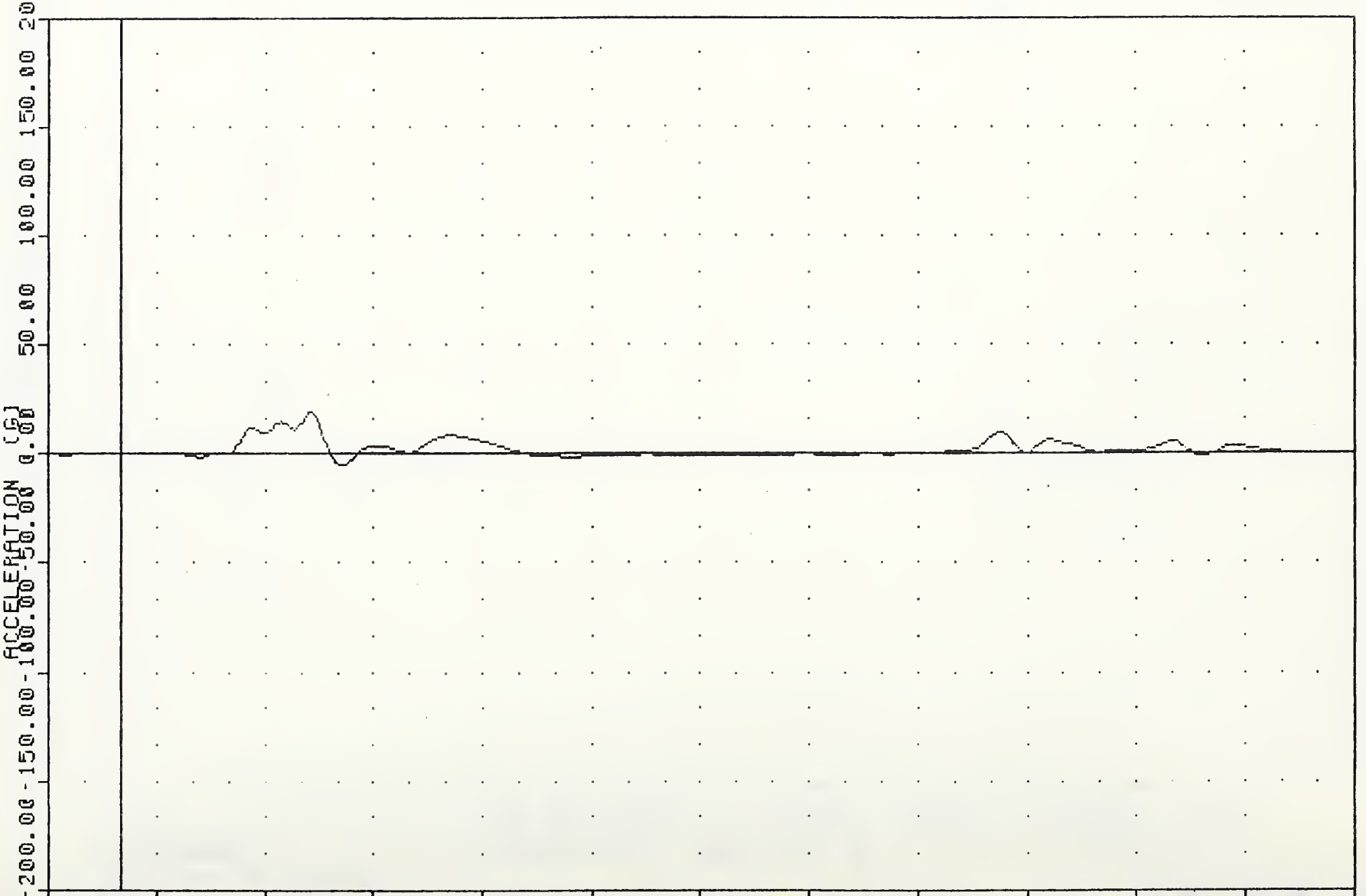


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

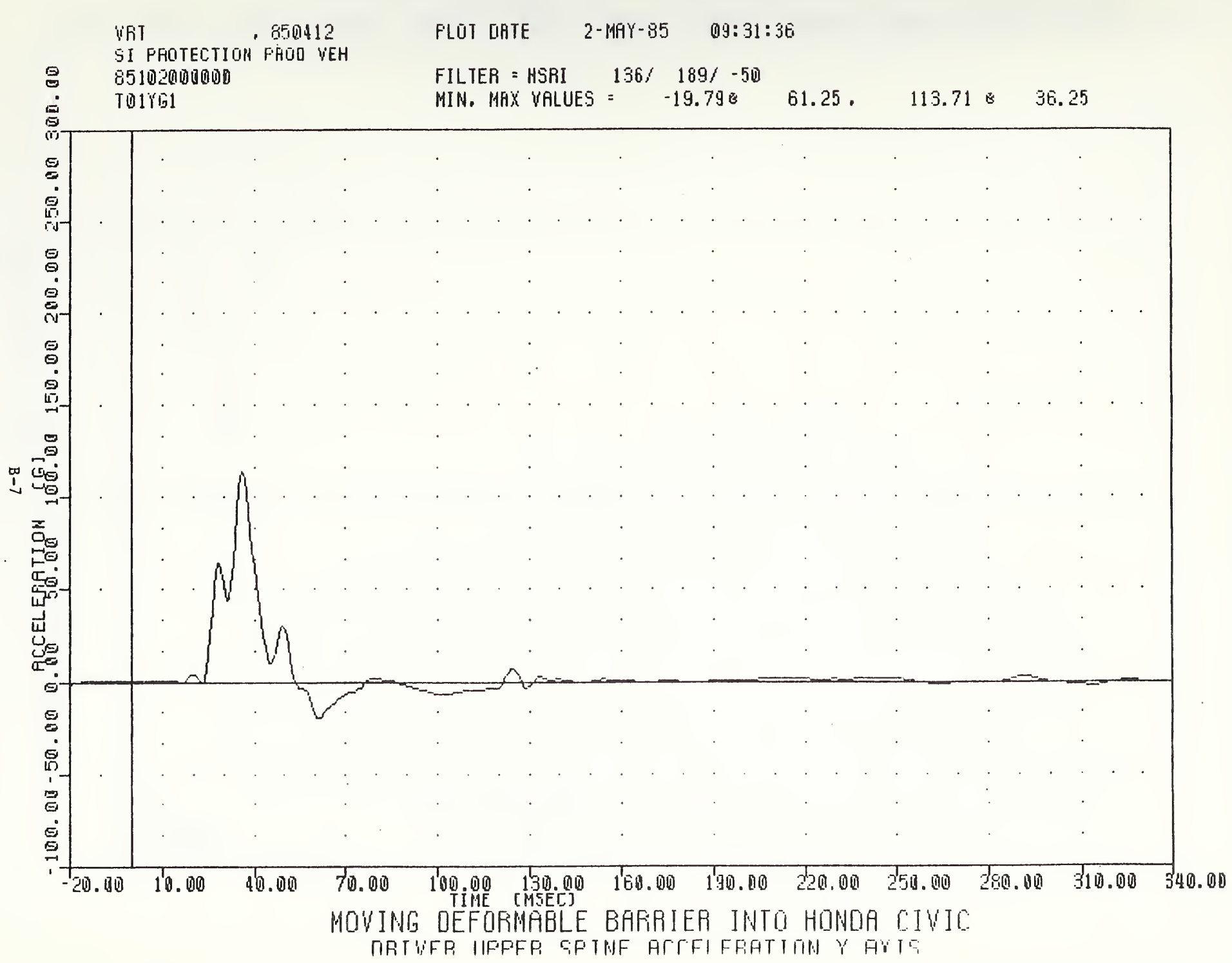
DRIVER HEAD ACCELERATION 7 AXIS

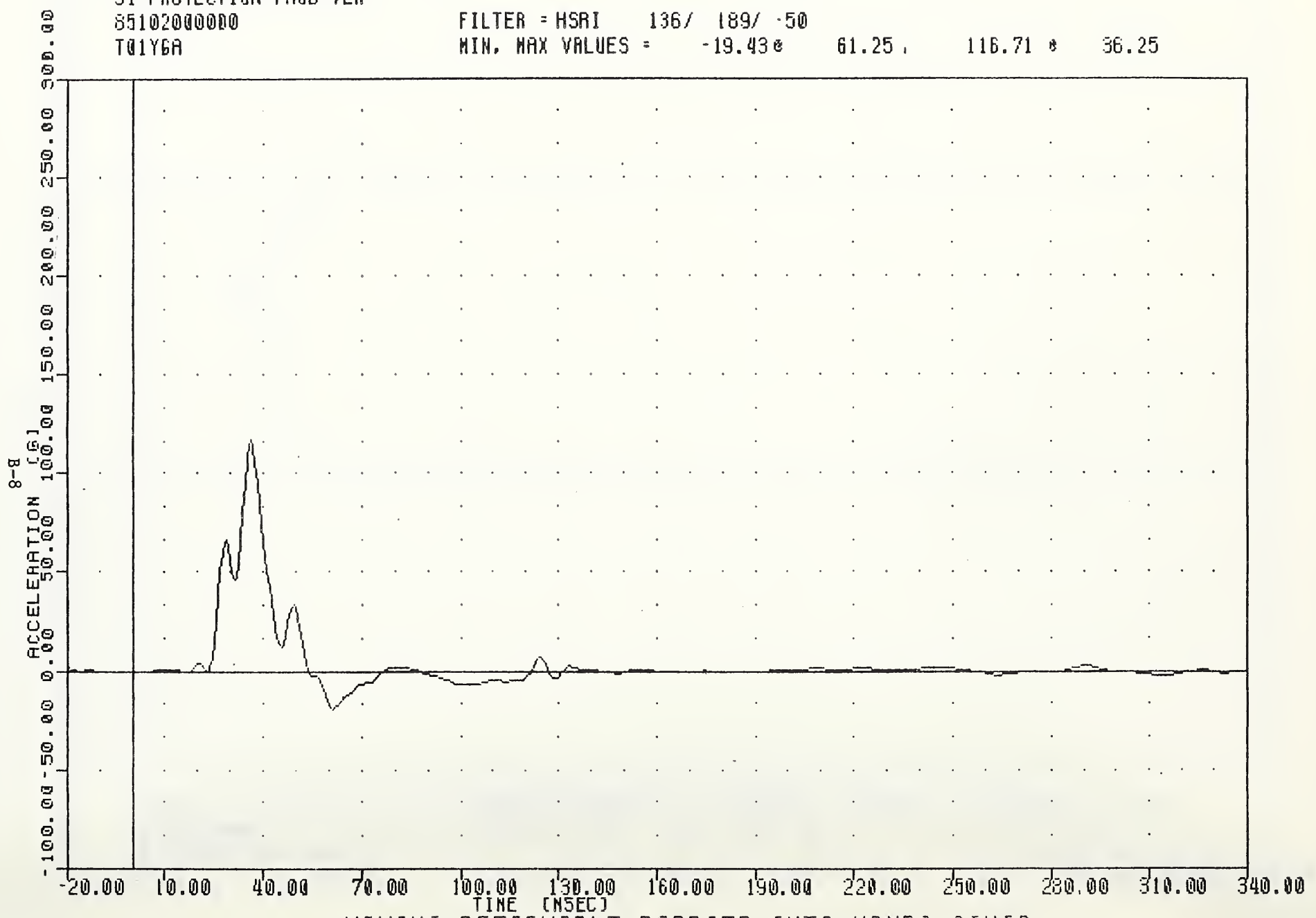

VRT , 850412
SI PROTECTION PROD VEH
85102000000
HEDRG1
PLOT DATE 30-APR-85 10:16:29
FILTER = ALPF 1650/ 5217/ -40
MIN, MAX VALUES = 0.22 @ -9.75 , 129.59 @ 36.63
ACCELERATION (G)
-10.00 40.00 90.00 140.00 190.00 240.00 290.00 340.00 390.00
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER HEAD RESULTANT

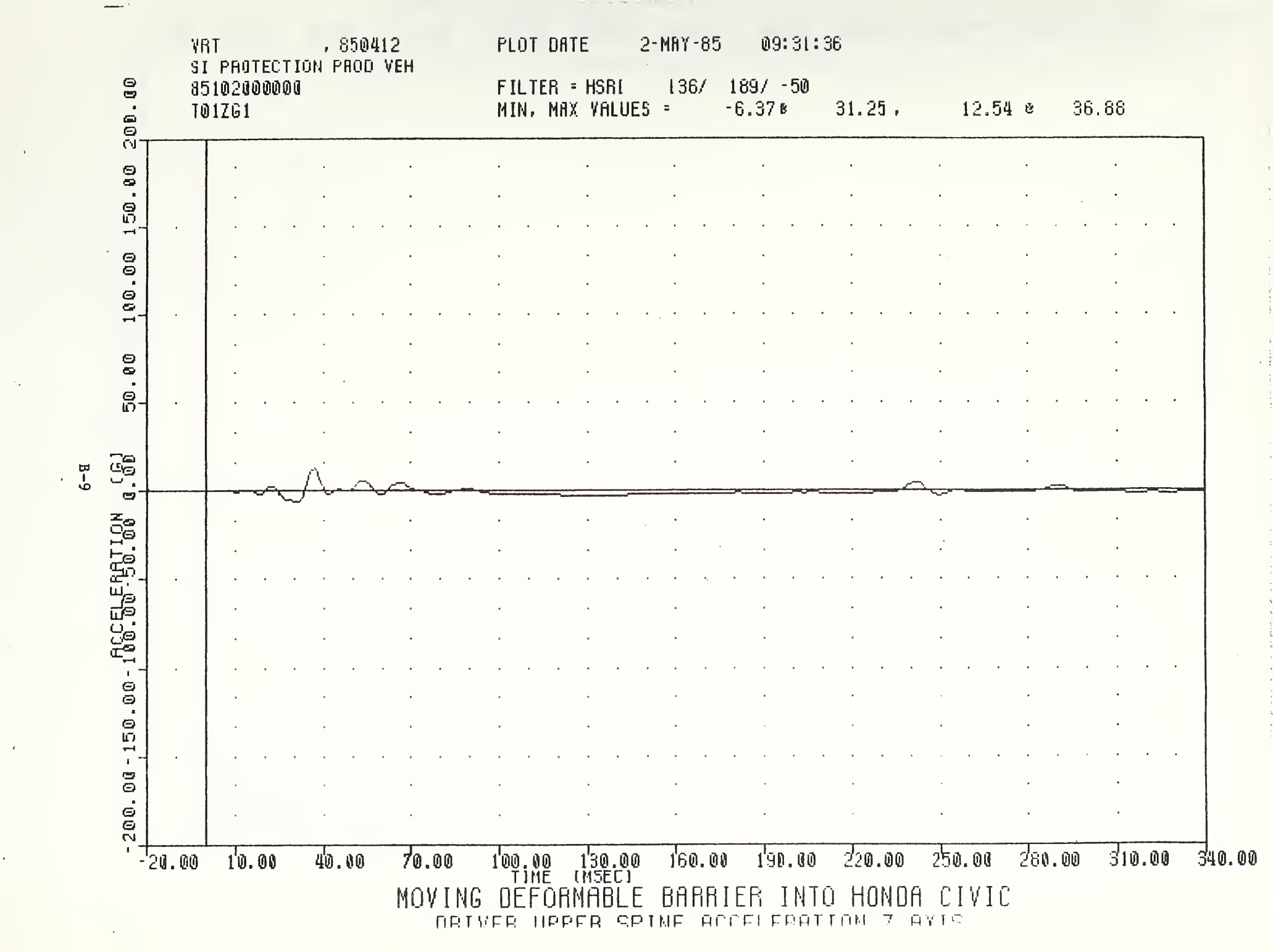
VRT , 850412 PLOT DATE 2-MAY-85 09:31:36
SI PROTECTION PROD VEH
85102000000 FILTER = HSRI 136/ 189/ -50
T01XG1 MIN, MAX VALUES = -5.36 @ 61.25 , 19.23 @ 52.50



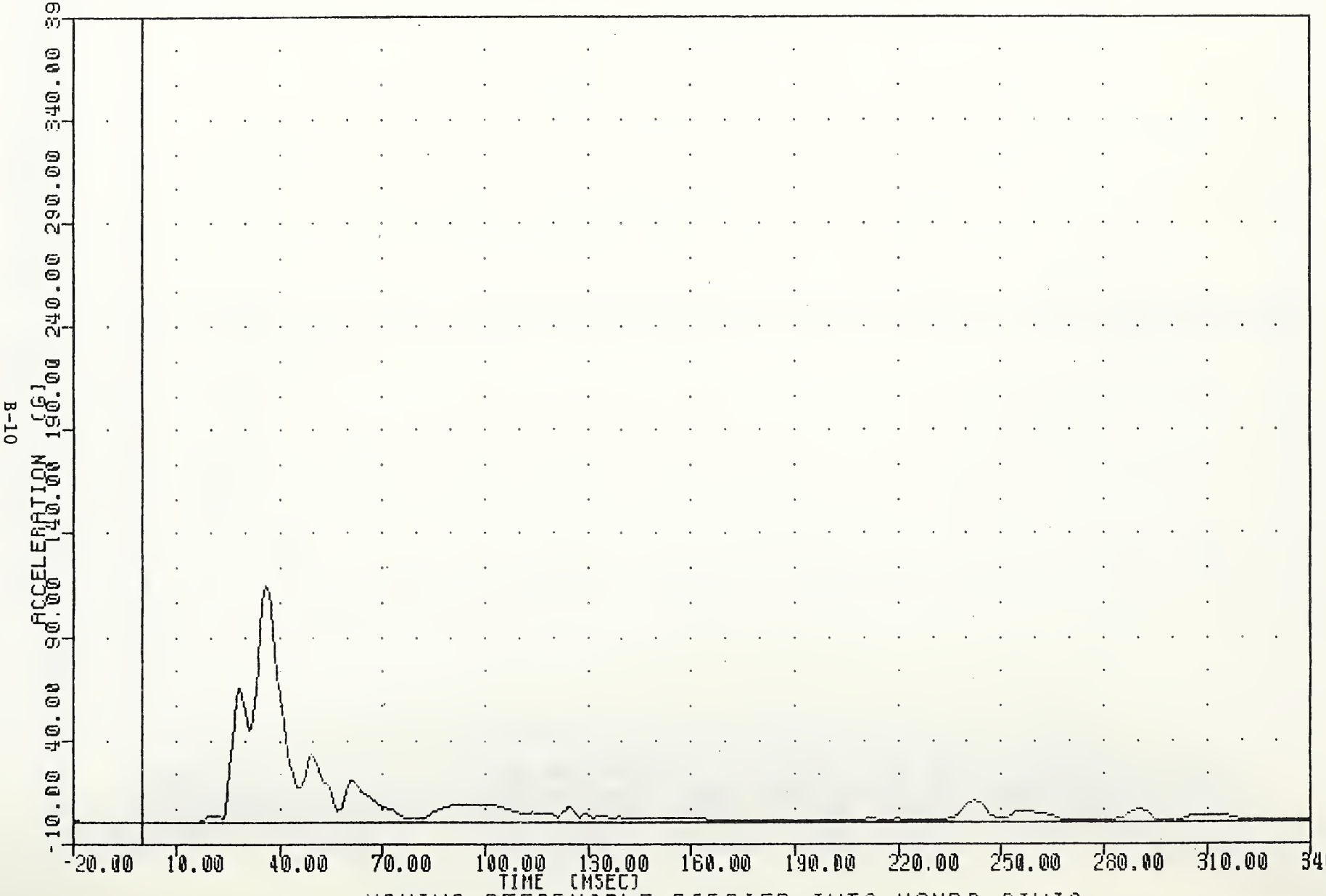
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER UPPER SPINE ACCELERATION Y AXIS


VRT , 850412
PLOT DATE 2-MAY-85 09:31:36
SI PROTECTION PROD VEH
85102000000
FILTER = HSRI 136/ 189/ -50
T01YG1
MIN, MAX VALUES = -19.79@ 61.25, 113.71@ 36.25
ACCELERATION (G)
-100.00 -50.00 0.00 50.00 100.00 150.00 200.00 250.00 300.00
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER UPPER SPINE ACCELERATION Y AXIS


VRT , 850412
SI PROTECTION PROD VEH
85102000000
T01YGA
PLOT DATE 2-MAY-85 09:31:36
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -19.43 @ 61.25 , 116.71 @ 36.25
ACCELERATION (G)
-100.00 -50.00 0.00 50.00 100.00 150.00 200.00 250.00 300.00
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER UPPER SPINE ACCELERATION -2 Y AXIS

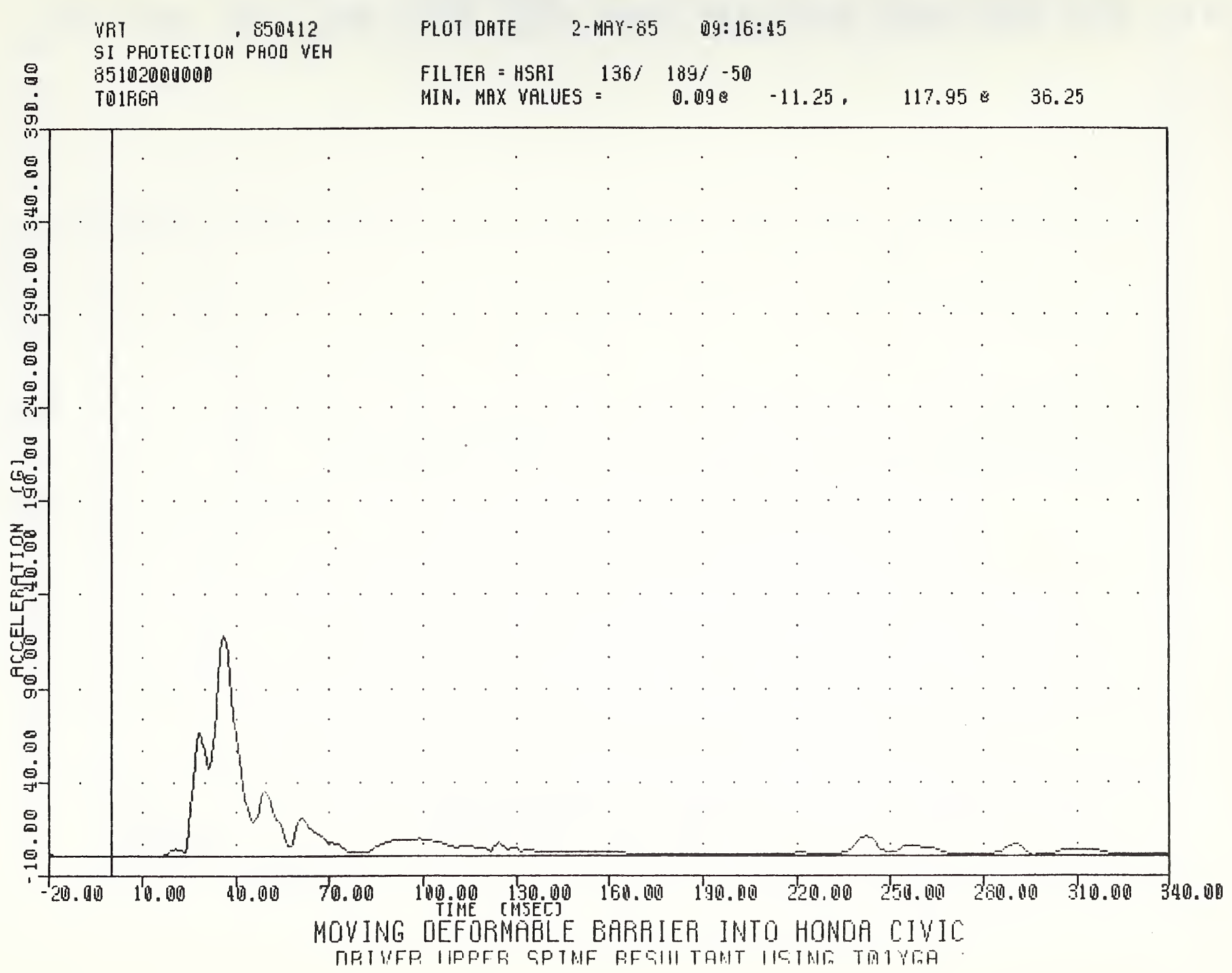

VRT , 850412
SI PROTECTION PROD VEH
85102000000
T01ZG1
PLOT DATE 2-MAY-85 09:31:36
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -6.37 @ 31.25 , 12.54 @ 36.88
ACCELERATION (G)
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER UPPER SPINE ACCELERATION Z AXIS

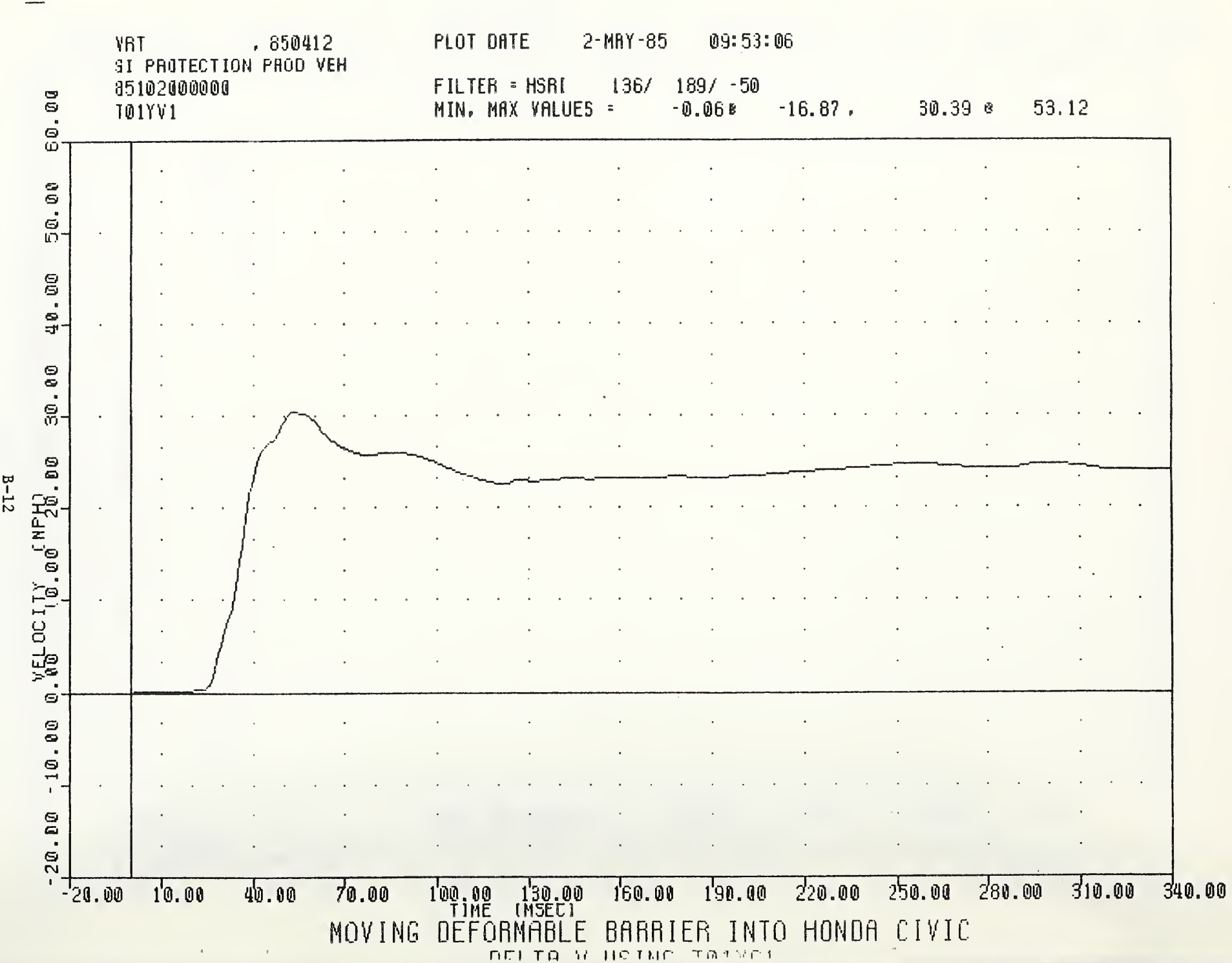
VRT , 850412 PLOT DATE 2-MAY-85 09:31:36
SI PROTECTION PROD VEH
8510200000 FILTER = HSRI 136/ 189/ -50
T01RG1 MIN. MAX VALUES = 0.11@ 15.63 , 114.98 @ 36.25

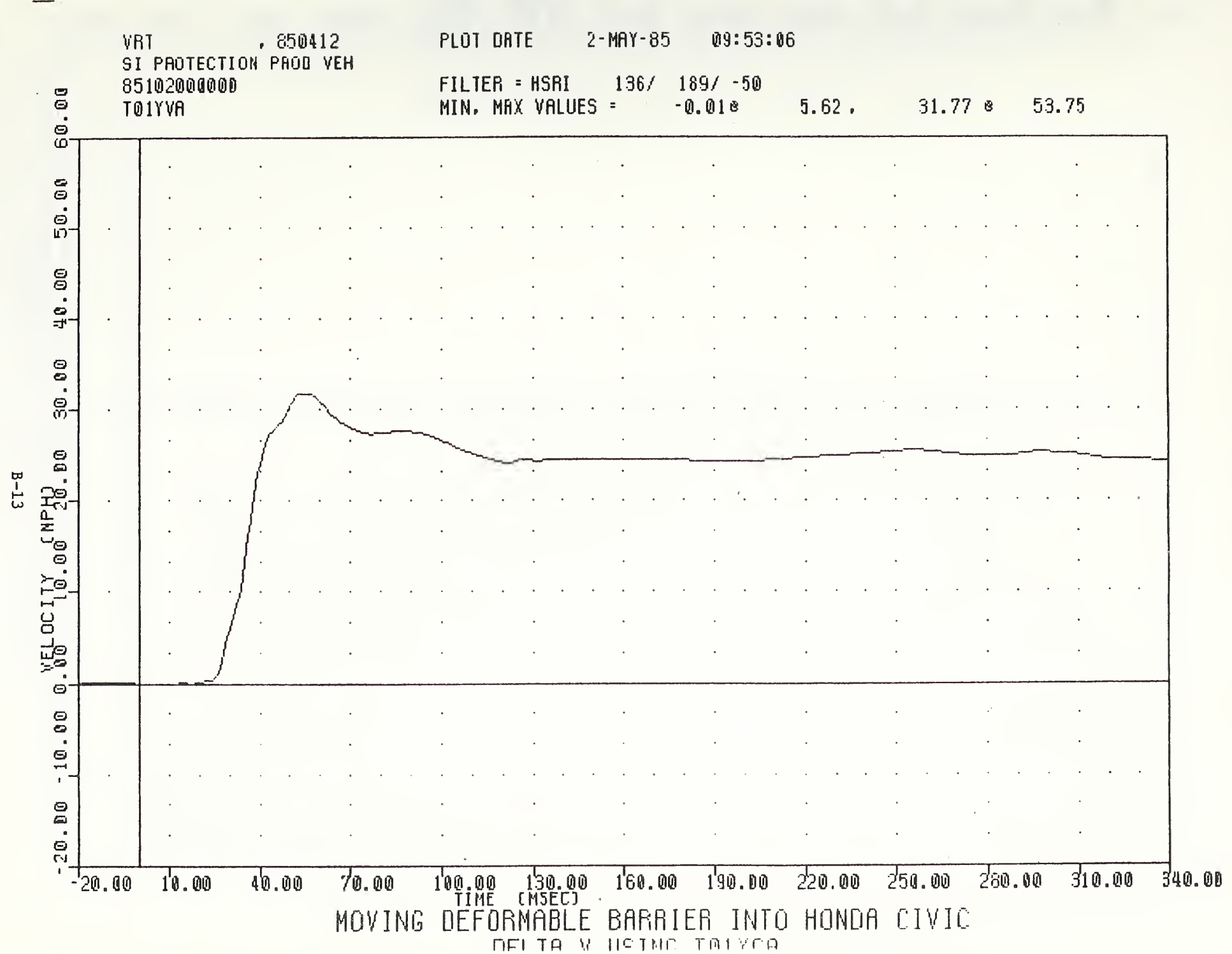


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

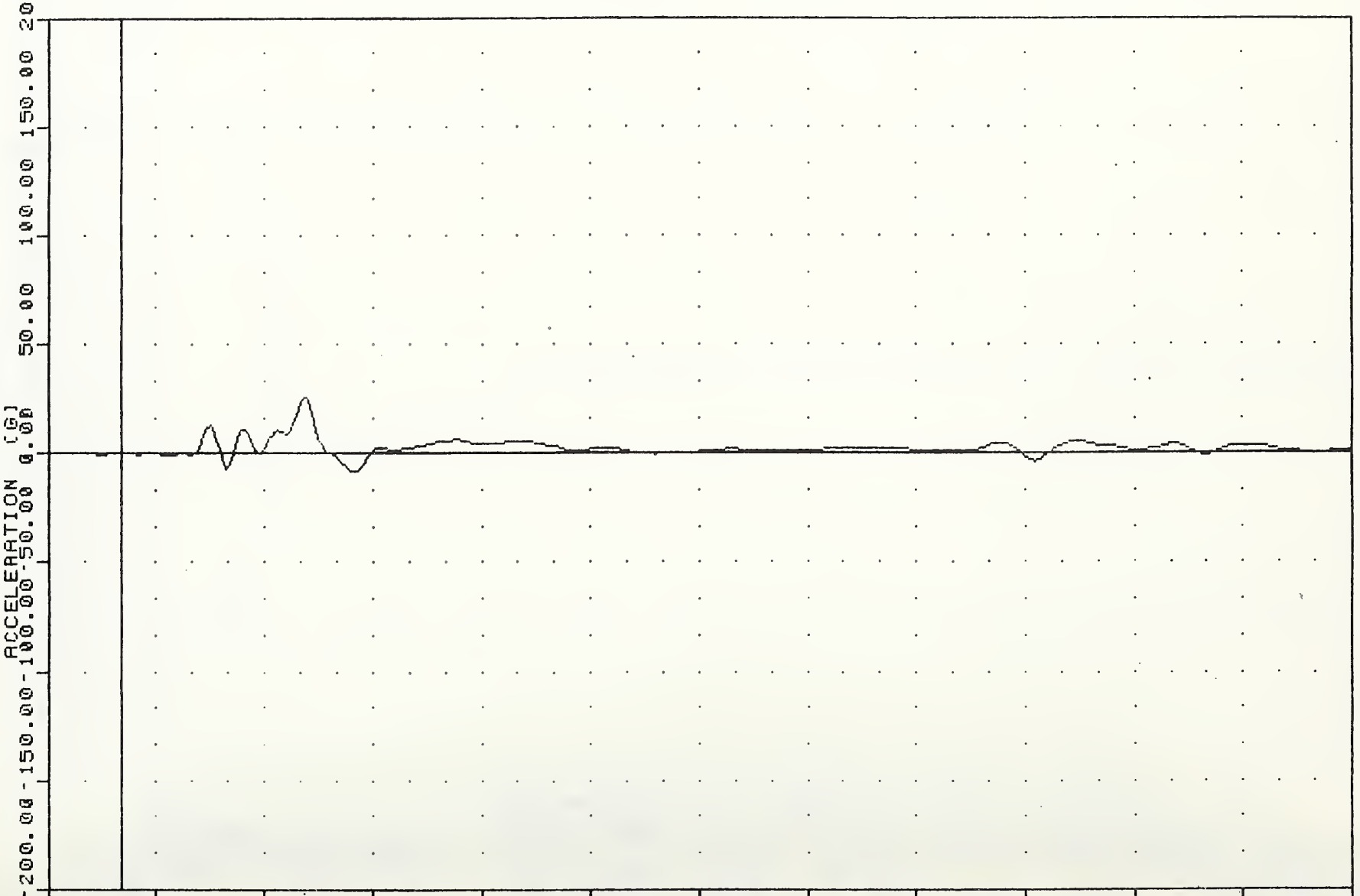
DRIVER UPPER SPINE RESULTANT


VRT , 850412
SI PROTECTION PROD VEH
85102000000
T01RGA
PLOT DATE 2-MAY-85 09:16:45
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = 0.09@ -11.25 , 117.95 @ 36.25
ACCELERATION [G]
-10.00 40.00 90.00 140.00 190.00 240.00 290.00 340.00 390.00
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER UPPER SPINE RESULTANT USING T01YGA

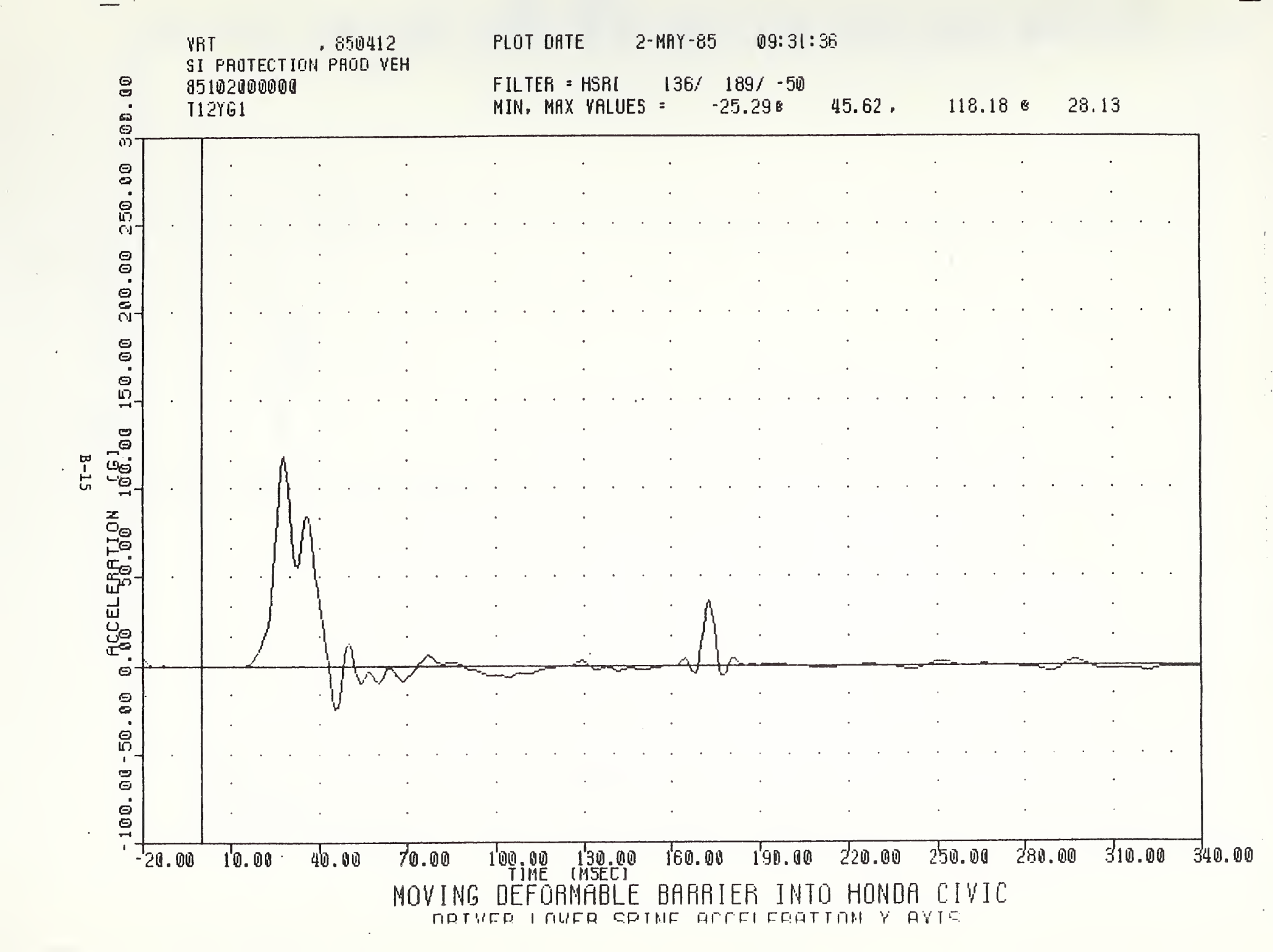

VRT , 850412
SI PROTECTION PROD VEH
85102000000
T01YV1
PLOT DATE 2-MAY-85 09:53:06
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -0.06 @ -16.87 , 30.39 @ 53.12
VELOCITY (MPH)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

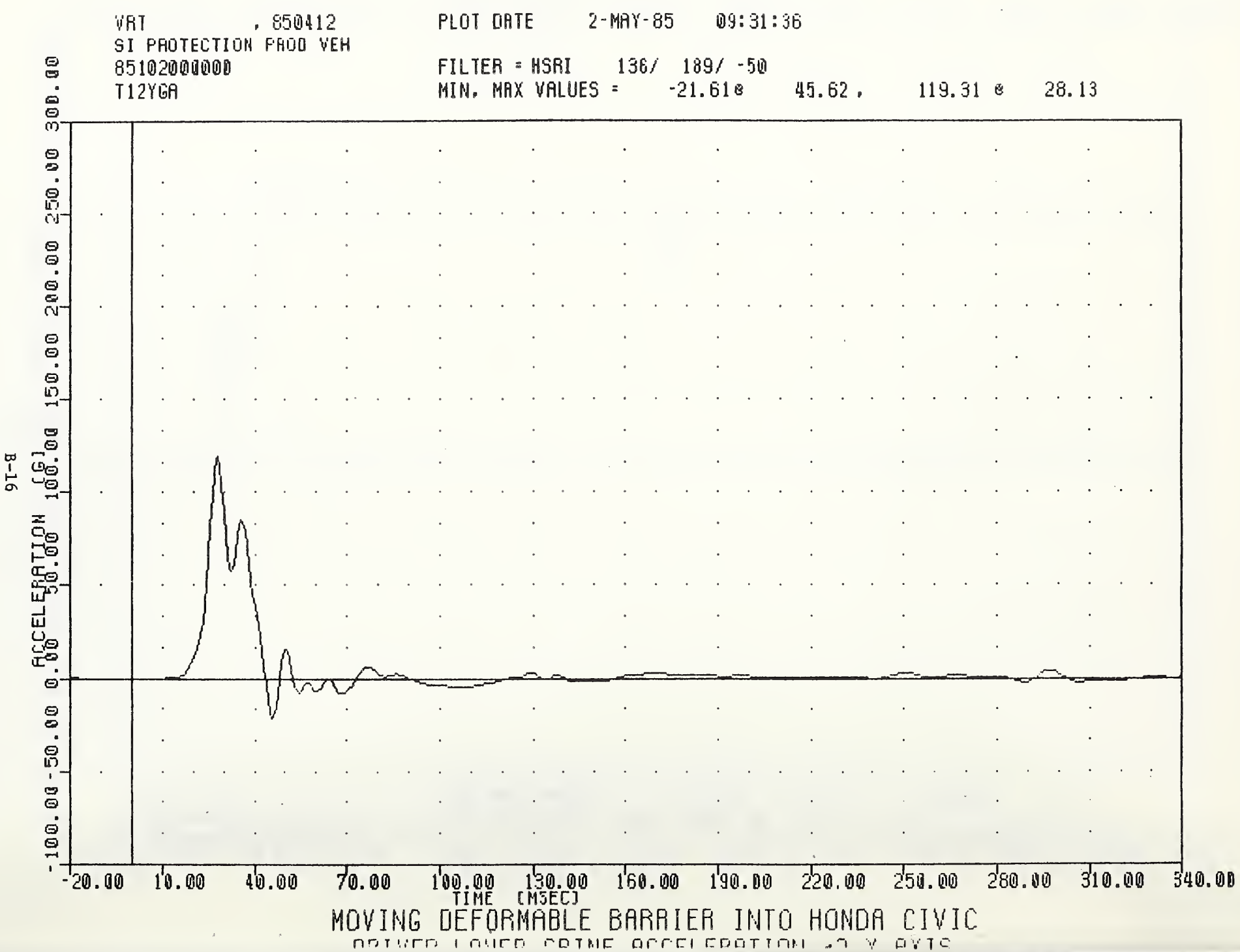

VRT , 850412
SI PROTECTION PROD VEH
85102000000
T01YVA
PLOT DATE 2-MAY-85 09:53:06
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -0.01@ 5.62 , 31.77 @ 53.75
VELOCITY (MPH)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING T01YCA

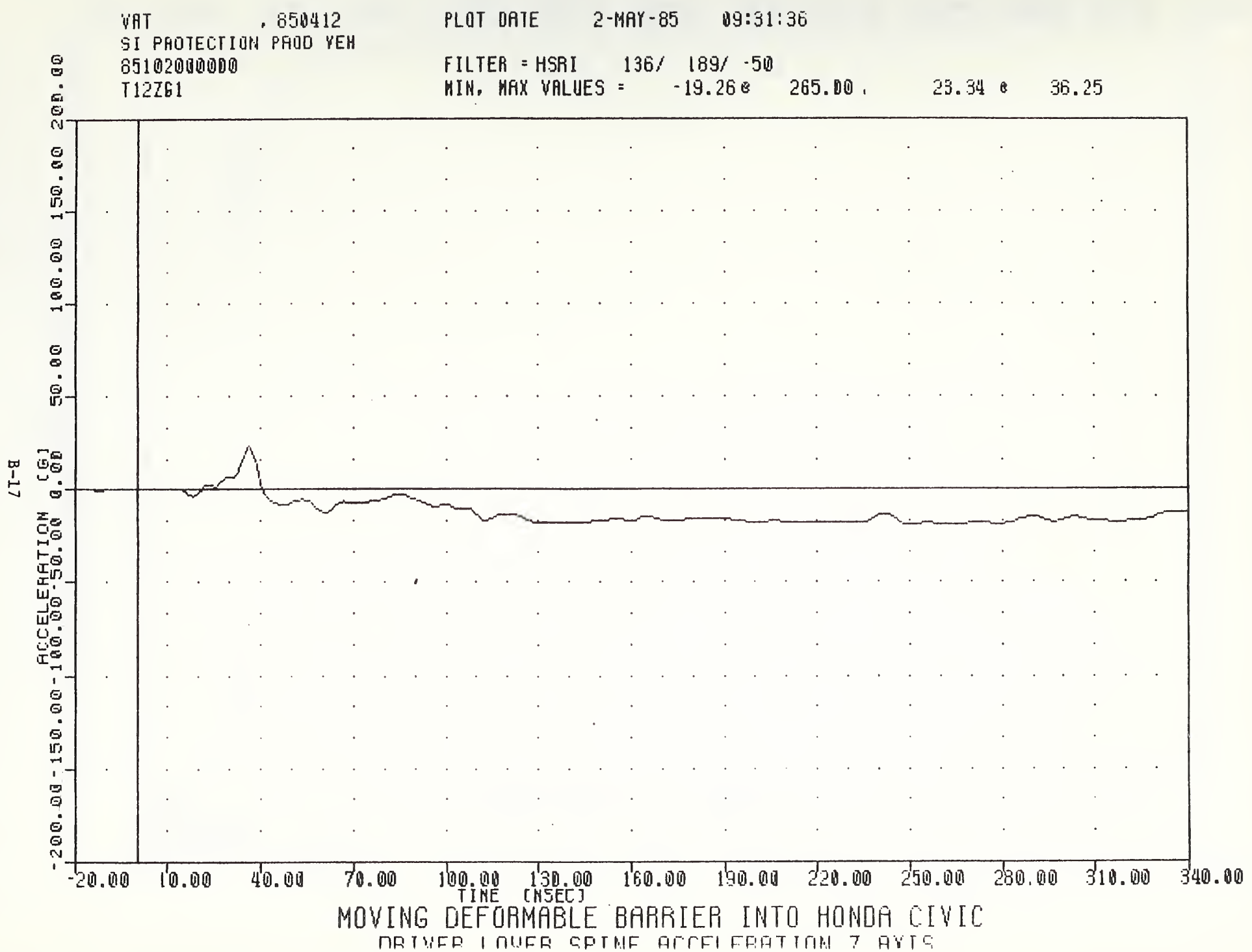
VAT , 850412 PLOT DATE 2-MAY-85 09:31:36
SI PROTECTION PADD VEH
85102000000 FILTER = HSRI 136/ 189/ -50
T12XG1 MIN, MAX VALUES = -8.62 @ 65.00 , 25.47 @ 51.25



MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER LOWER SPINE ACCELERATION X AXIS

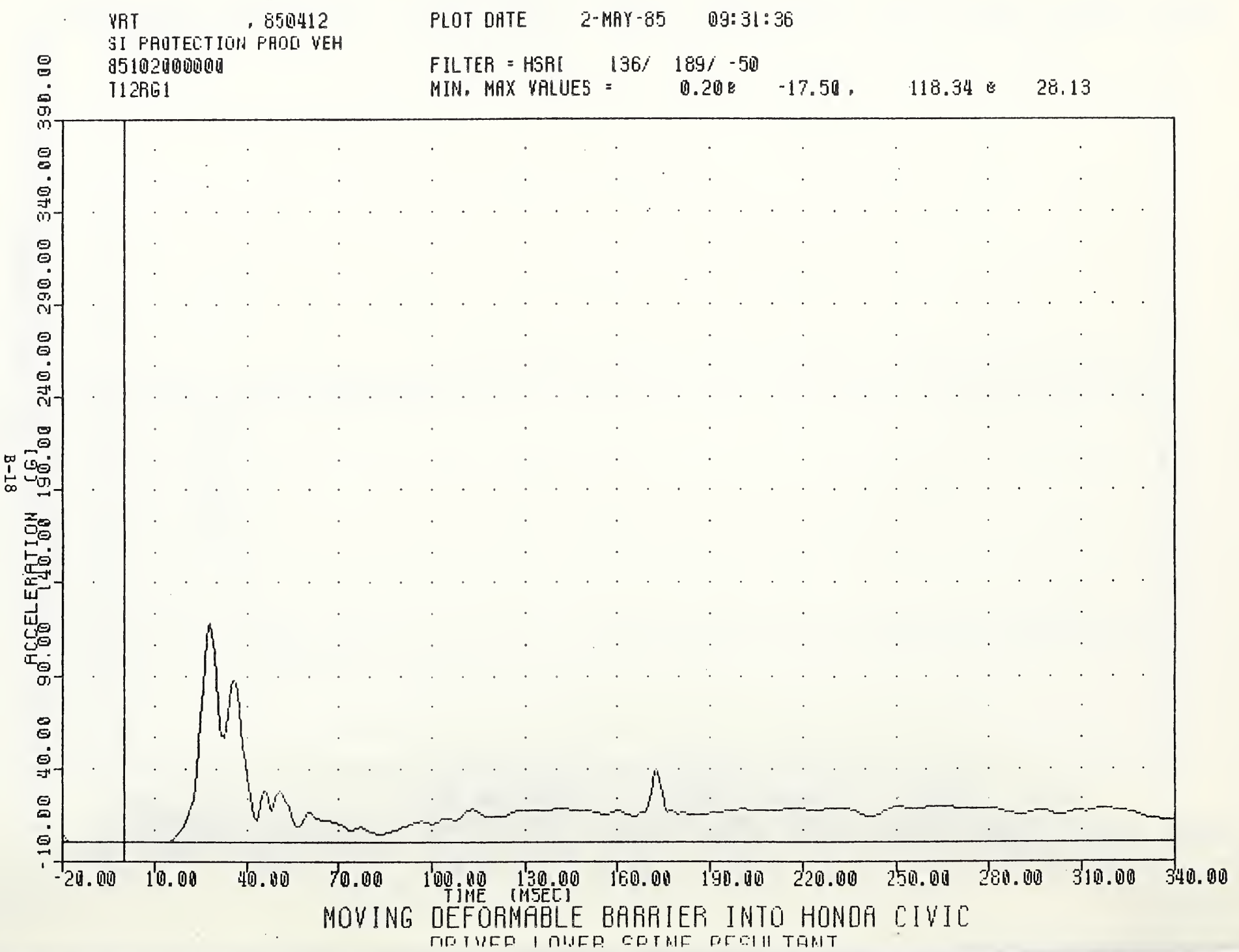

VRT , 850412
SI PROTECTION PROD VEH
85102000000
T12YG1
PLOT DATE 2-MAY-85 09:31:36
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -25.29 @ 45.62 , 118.18 @ 28.13
ACCELERATION (G)
300.00
250.00
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER LOWER SPINE ACCELERATION Y AXIS


VRT , 850412
SI PROTECTION PROD VEH
85102000000
T12YGA
PLOT DATE 2-MAY-85 09:31:36
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -21.61@ 45.62 , 119.31 @ 28.13
ACCELERATION [G]
-100.00 -50.00 0.00 50.00 100.00 150.00 200.00 250.00 300.00
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER LOWER CRIME ACCELERATION X-Y AXIS

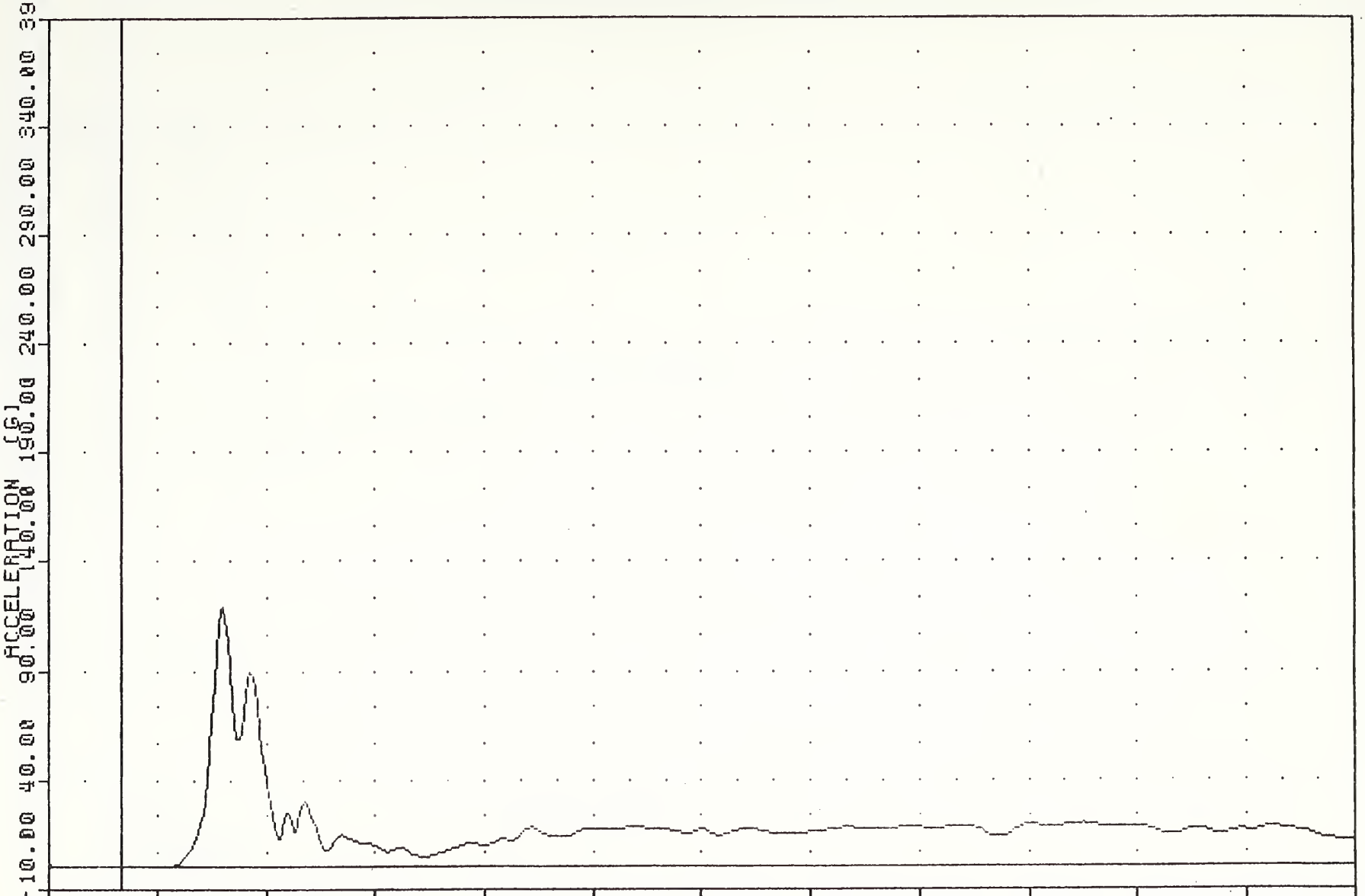


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

DRIVER LOWER SPINE ACCELERATION Z AXIS

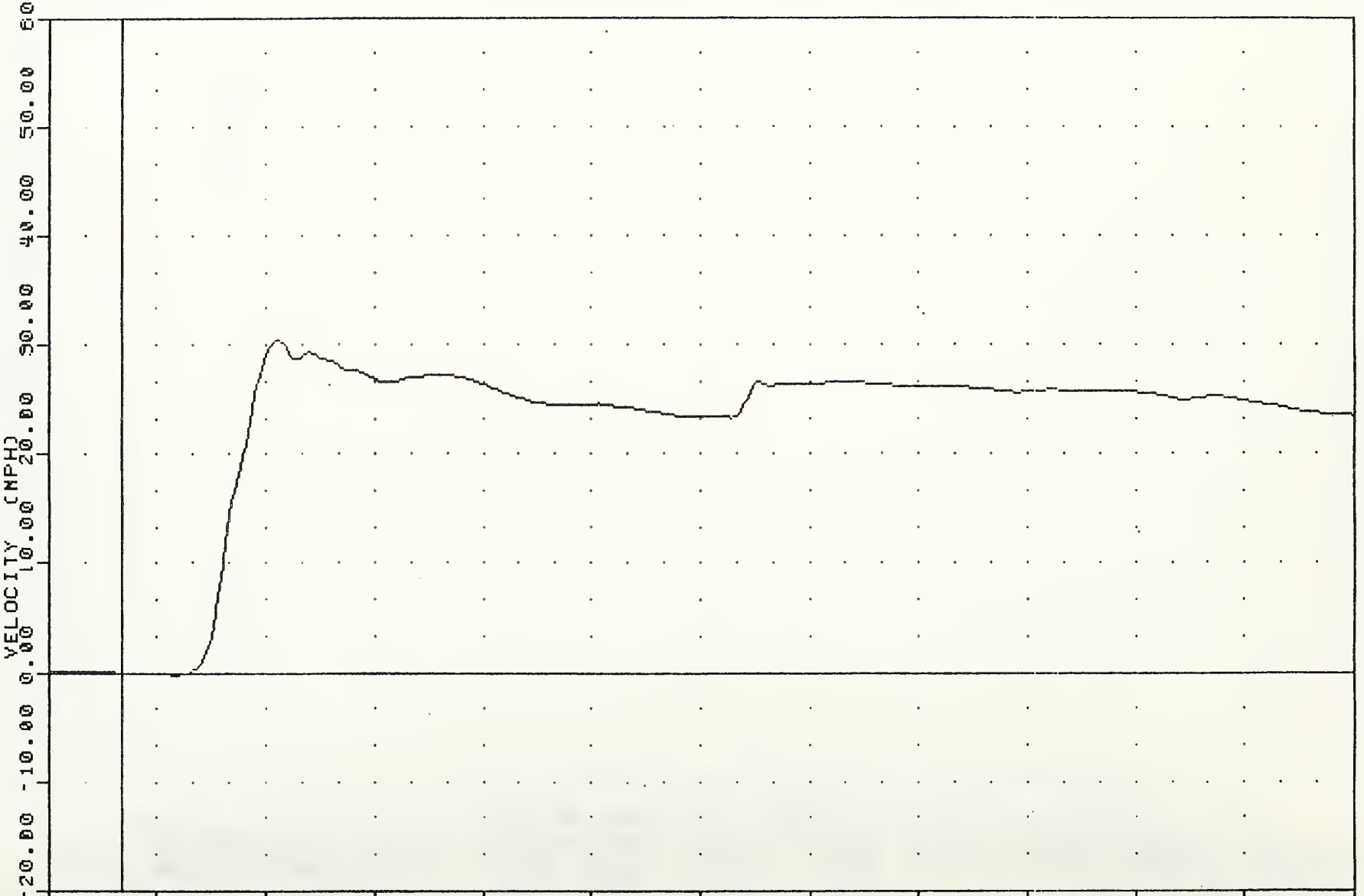

VRT , 850412
SI PROTECTION PROD VEH
851020000000
T12RG1
PLOT DATE 2-MAY-85 09:31:36
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = 0.20 @ -17.50 , 118.34 @ 28.13
ACCELERATION (G)
-10.00 40.00 90.00 140.00 190.00 240.00 290.00 340.00 390.00
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER LOWER SPINE RESULTANT

VRT , 850412 PLOT DATE 2-MAY-85 09:16:45
SI PROTECTION PROD VEH
85102@@@@@@ FILTER = HSR[136/ 189/ -50
T12RGA MIN, MAX VALUES = 0.10@ -16.25 , 119.47 @ 28.13



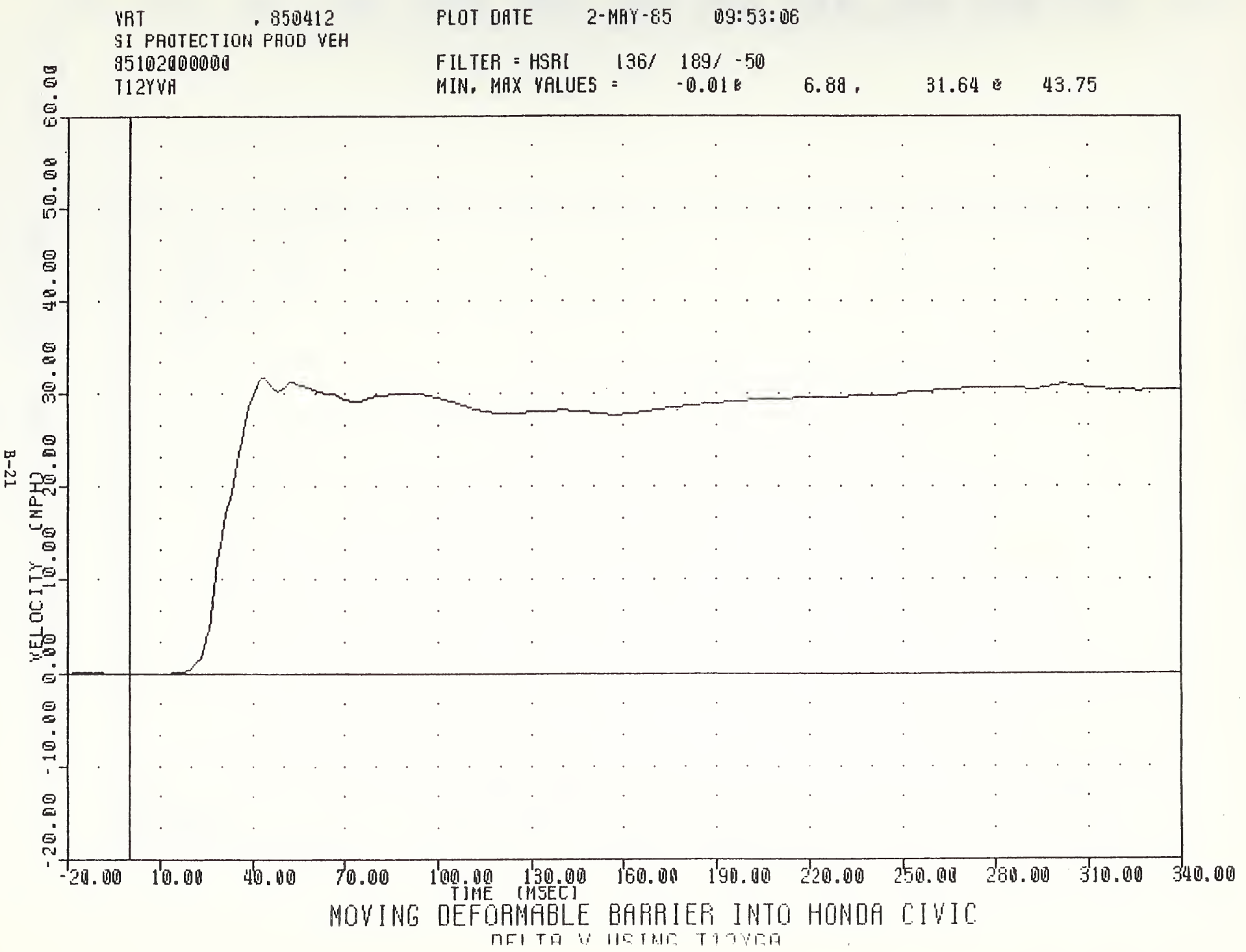
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER LOWER SPINE RESULTANT USING T12YGA

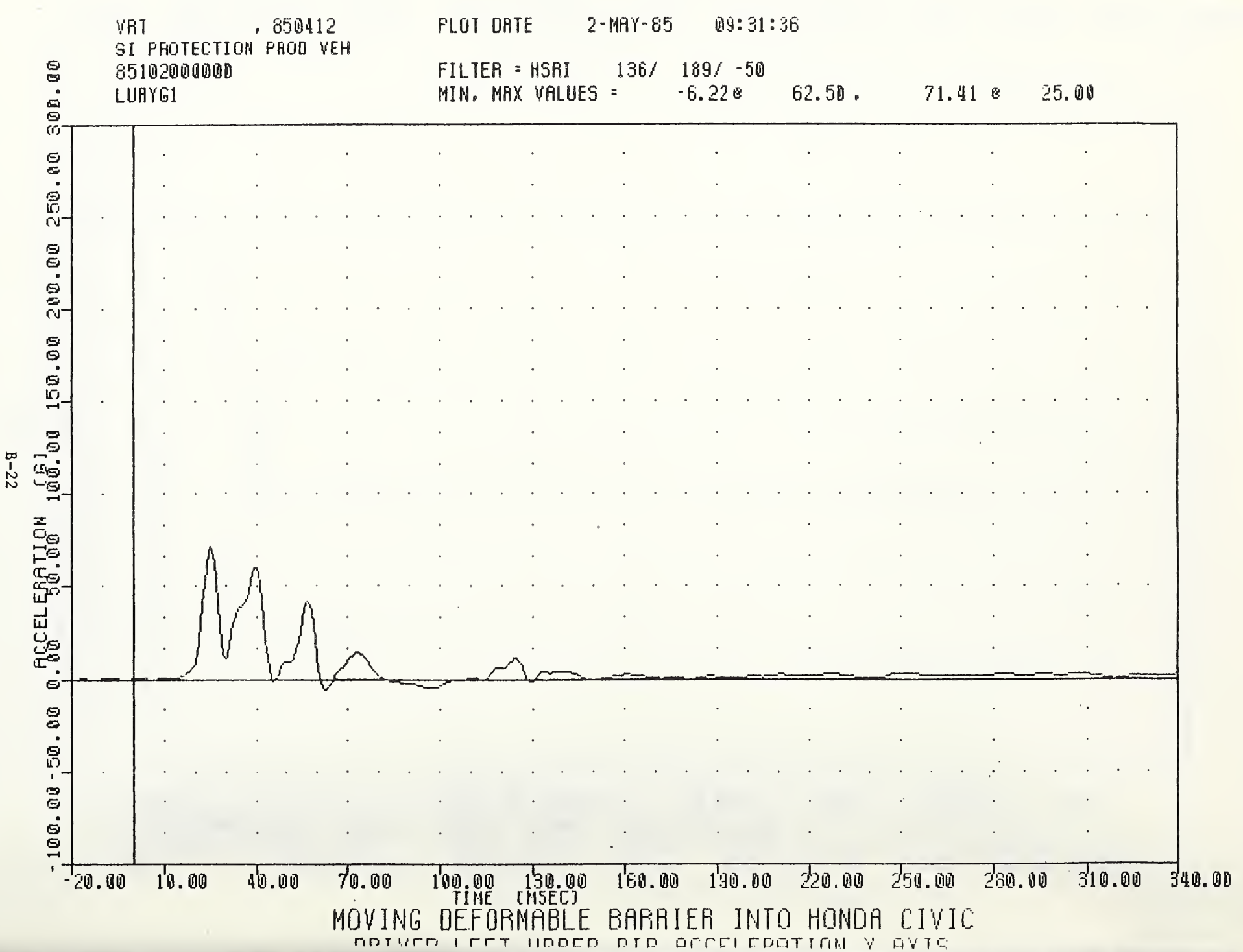
VRT , 850412 PLOT DATE 2-MAY-85 09:53:06
SI PROTECTION PROD VEH
8510200000D0 FILTER = HSRI 136/ 189/ -50
T12YV1 MIN, MAX VALUES = -0.22 @ 15.63 , 30.42 @ 43.13



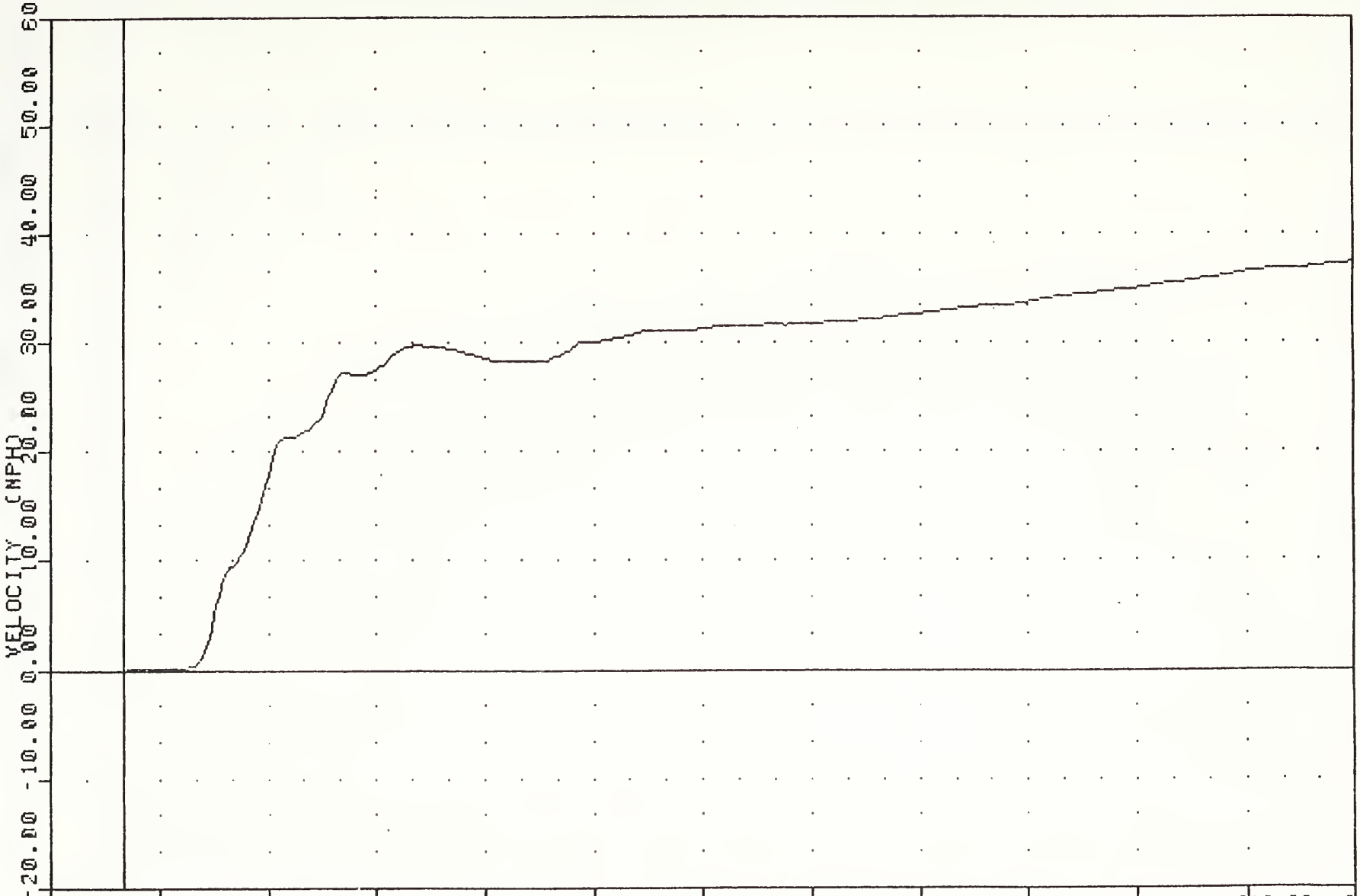
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

DELTA V USING T12YV1


VRT , 850412
SI PROTECTION PROD VEH
85102000000
T12YVA
PLOT DATE 2-MAY-85 09:53:06
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -0.01 @ 6.88 , 31.64 @ 43.75
VELOCITY (MPH)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING T12YVA


VRT , 850412
SI PROTECTION PROD VEH
85102000000
LURYG1
PLOT DATE 2-MAY-85 09:31:36
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -6.22 @ 62.50 , 71.41 @ 25.00
ACCELERATION (G)
300.00
250.00
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER LEFT UPPER RIB ACCELERATION Y AXIS

VRT , 850412 PLOT DATE 2-MAY-85 09:53:06
SI PROTECTION PROD VEH
85102000000 FILTER = HSRI 136/ 189/ -50
LURYV1 MIN, MAX VALUES = -0.03@ -11.25 , 37.42 @ 340.00



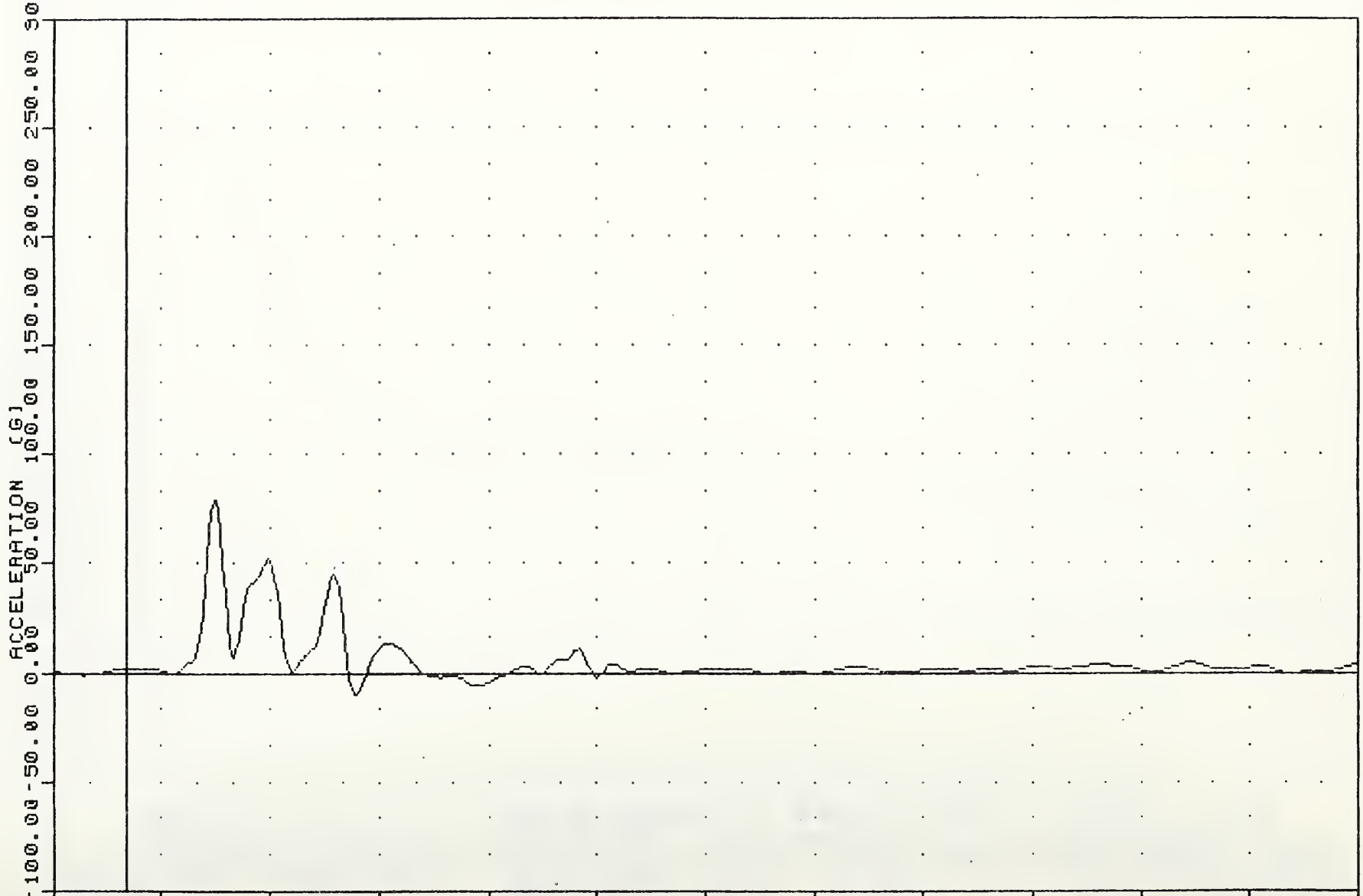
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

DELTA V USING LURYG1

VAT , 850412
SI PROTECTION PROD VEH
85102000000
LURYBA

PLOT DATE 2-MAY-85 09:31:36

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -10.17 @ 63.75 , 78.79 @ 25.00

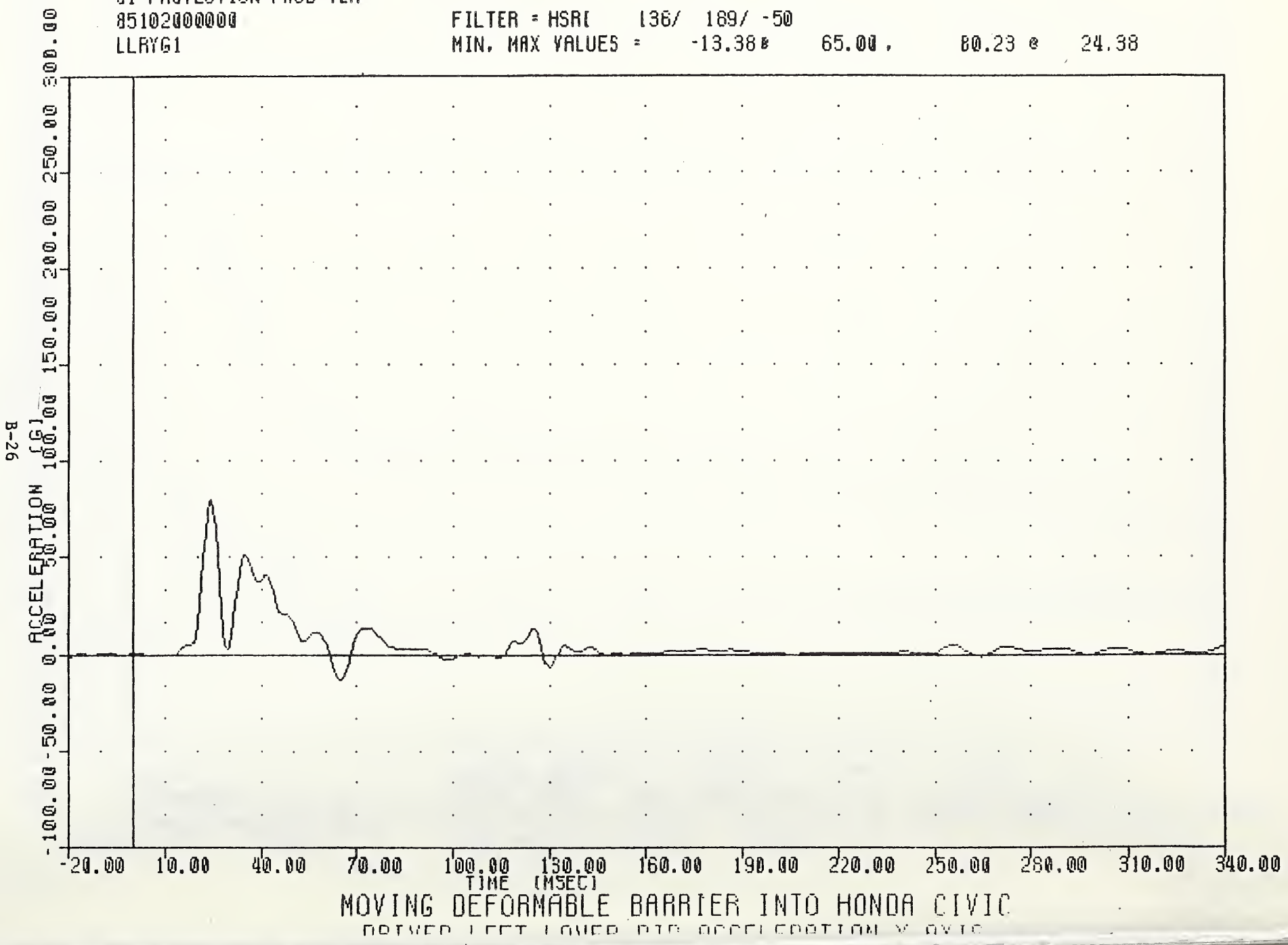


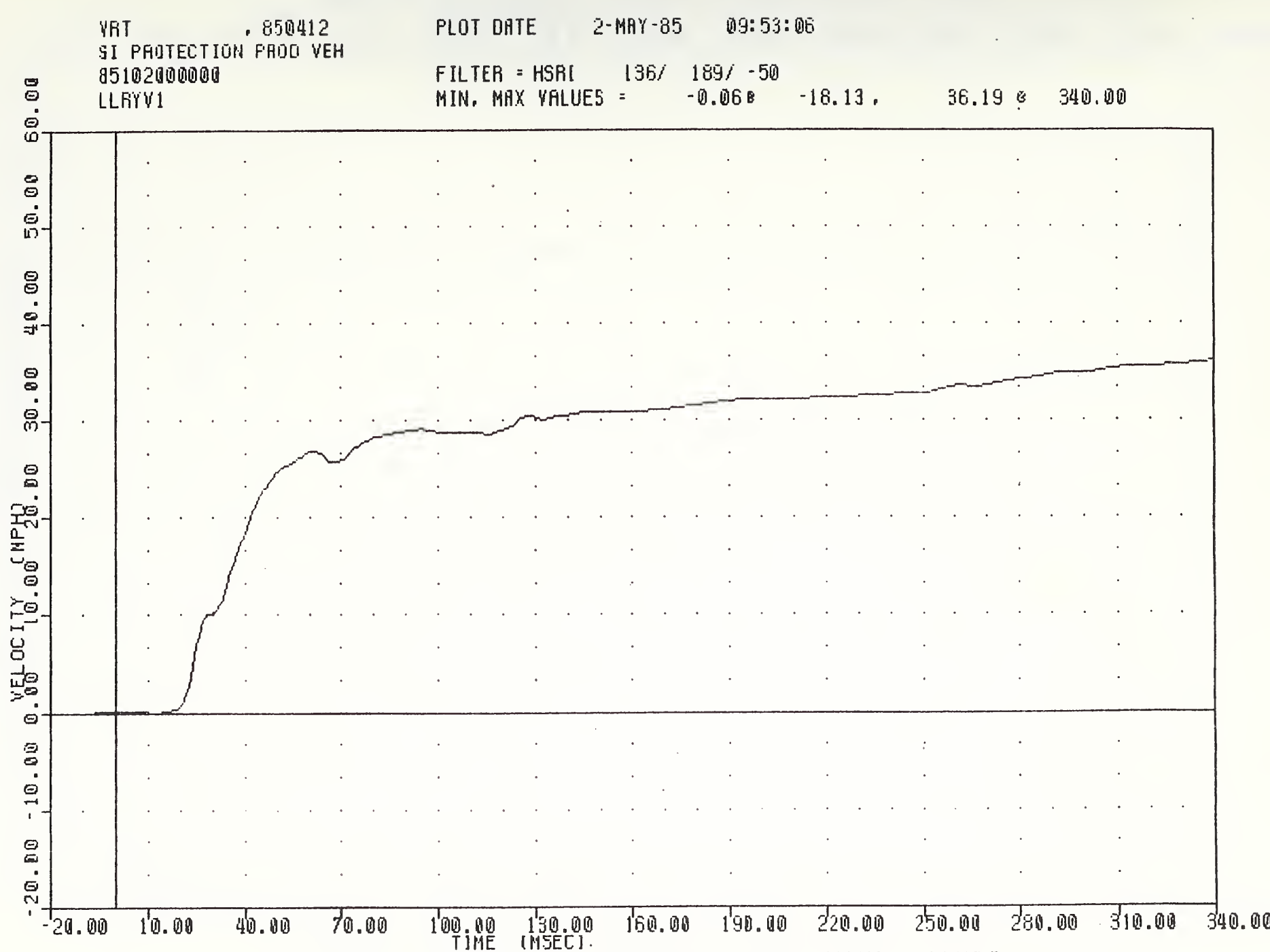
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

DRIVER LEFT UPPER RIB ACCELERATION @ Y AXIS

VRT , 850412 PLOT DATE 2-MAY-85 09:53:06
SI PROTECTION PROD VEH
851020@@@@@@
LURYVA FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -0.13 @ -6.88 , 37.97 @ 340.00

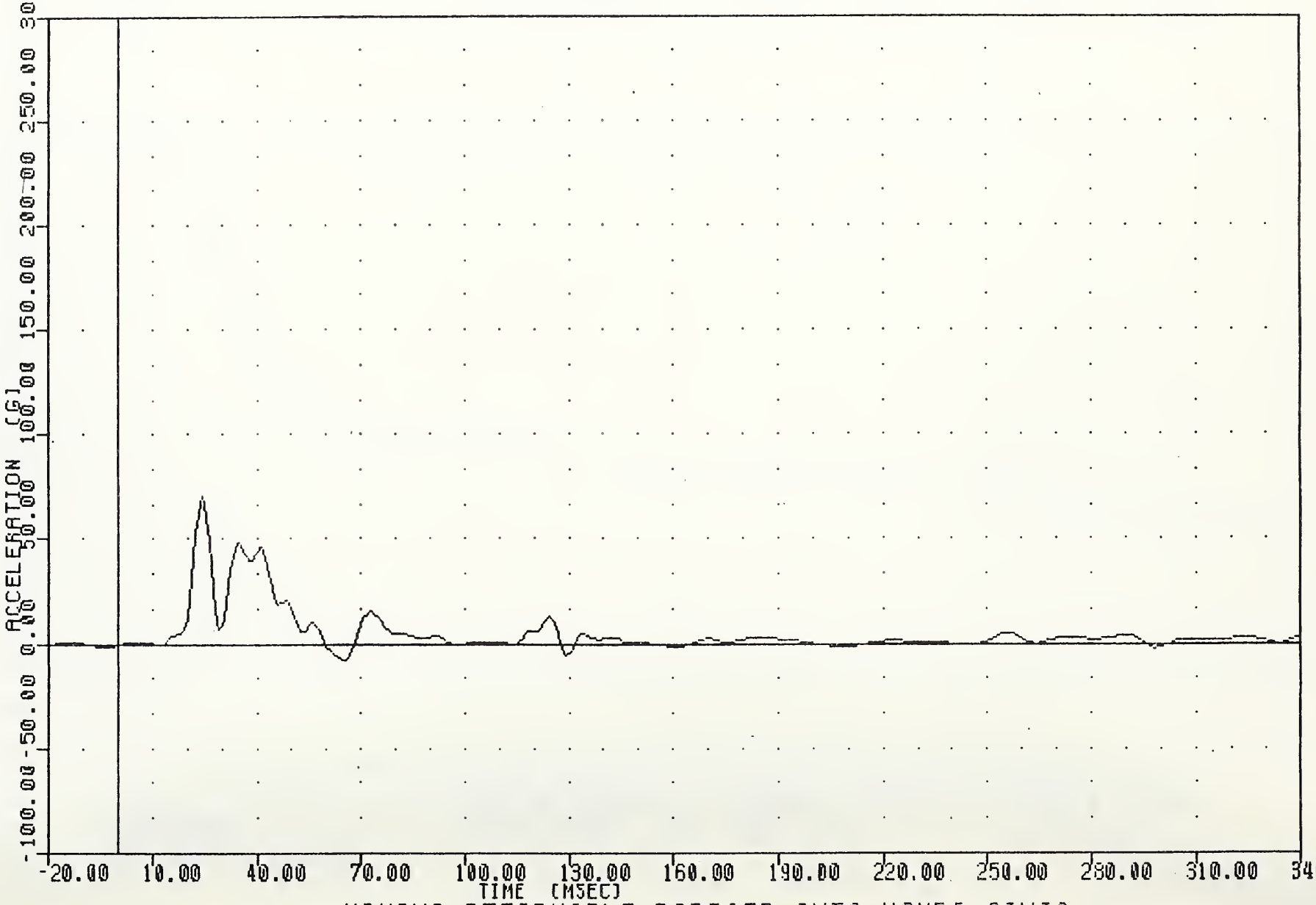
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC


VRT , 850412
SI PROTECTION PROD VEH
85102000000
LLRYG1
PLOT DATE 2-MAY-85 09:31:36
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -13.38 @ 65.00 , 80.23 @ 24.38
ACCELERATION (G)
-100.00 -50.00 0.00 50.00 100.00 150.00 200.00 250.00 300.00
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER LEFT LOWER B/P ACCELERATION X AXIS



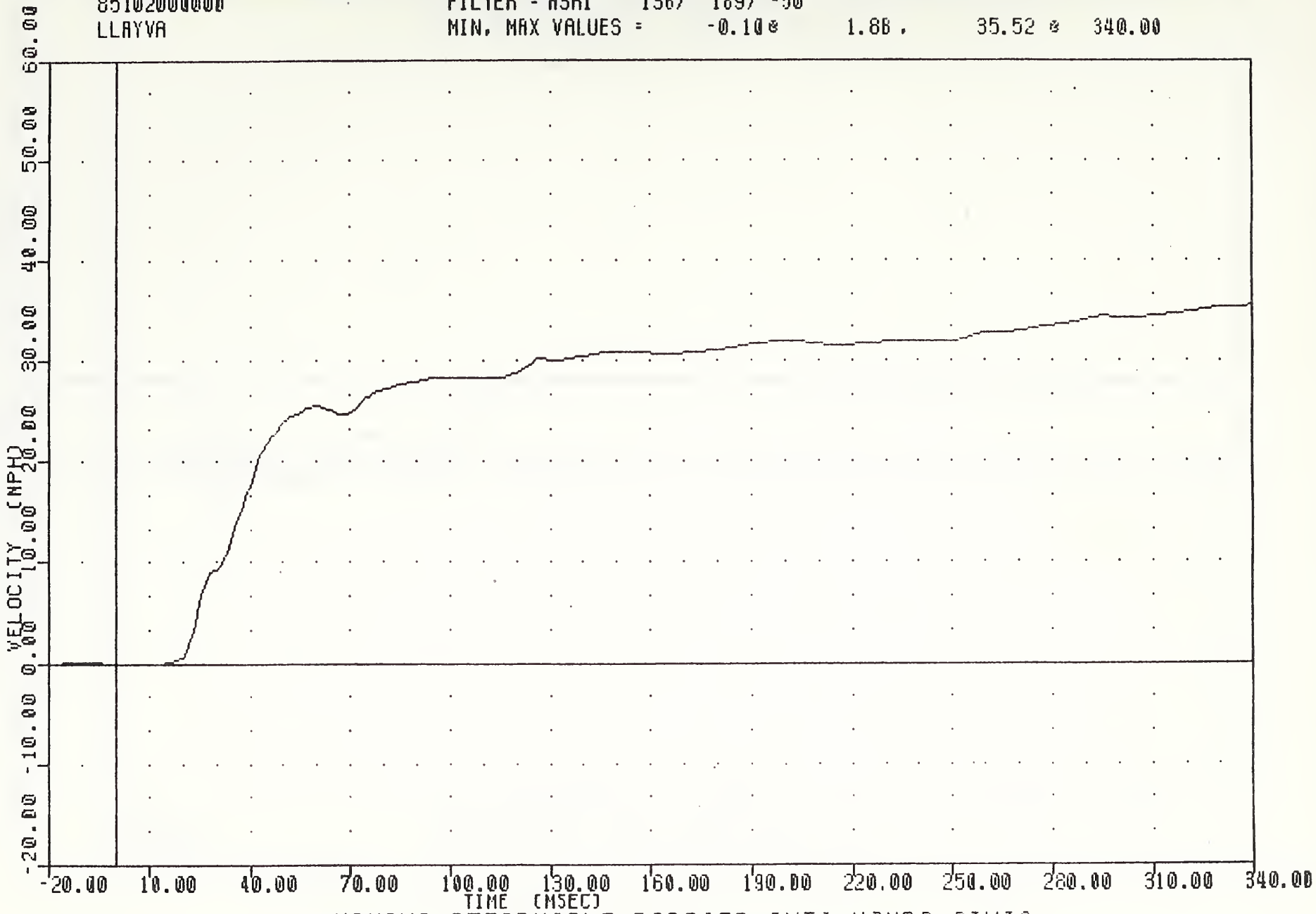
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING LLRYG1

VRT , 850412 PLOT DATE 2-MAY-85 09:31:36
SI PROTECTION PROD VEH
85102000000 FILTER = HSRI 136/ 189/ -50
LLAYGA MIN, MAX VALUES = -7.78 @ 65.00 , 70.26 @ 24.38

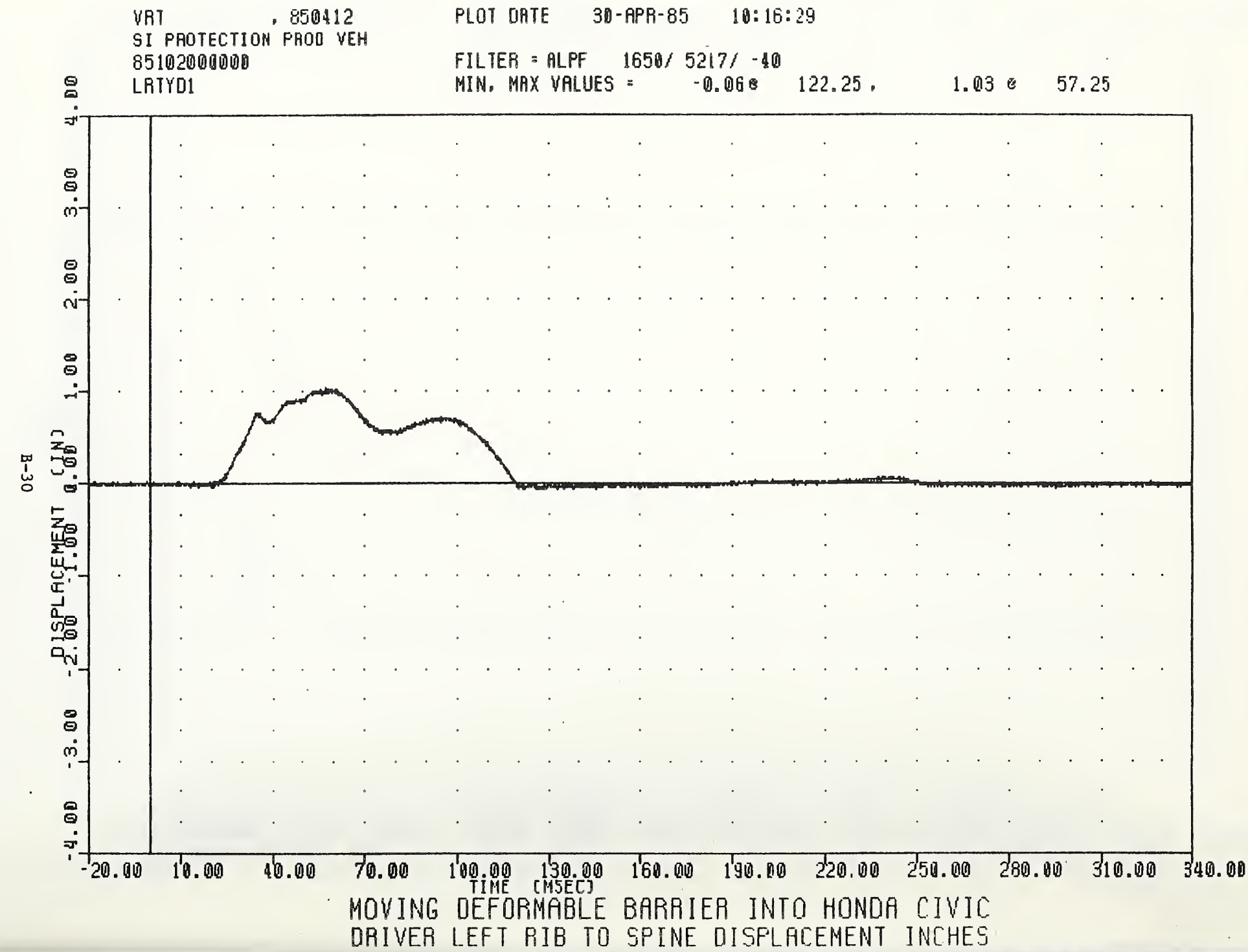


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER LEFT LOWER RIB ACCELERATION -2 Y AXIS

VRT , 850412 PLOT DATE 2-MAY-85 09:53:06
SI PROTECTION PROD VEH
8510200000 FILTER = HSRI 136/ 189/ -50
LLAYVA MIN, MAX VALUES = -0.10 @ 1.88 , 35.52 @ 340.00

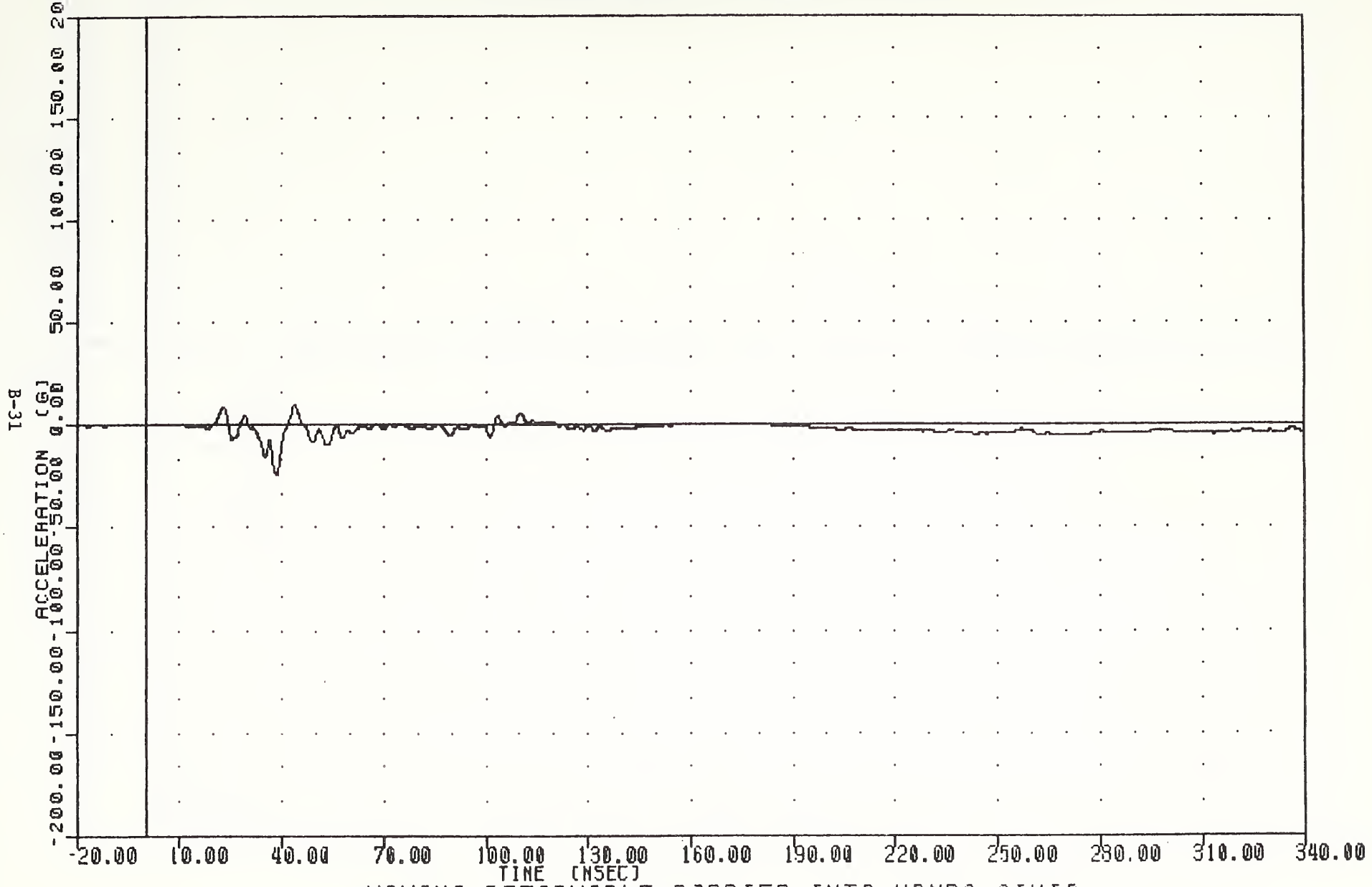


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING LLAYGA

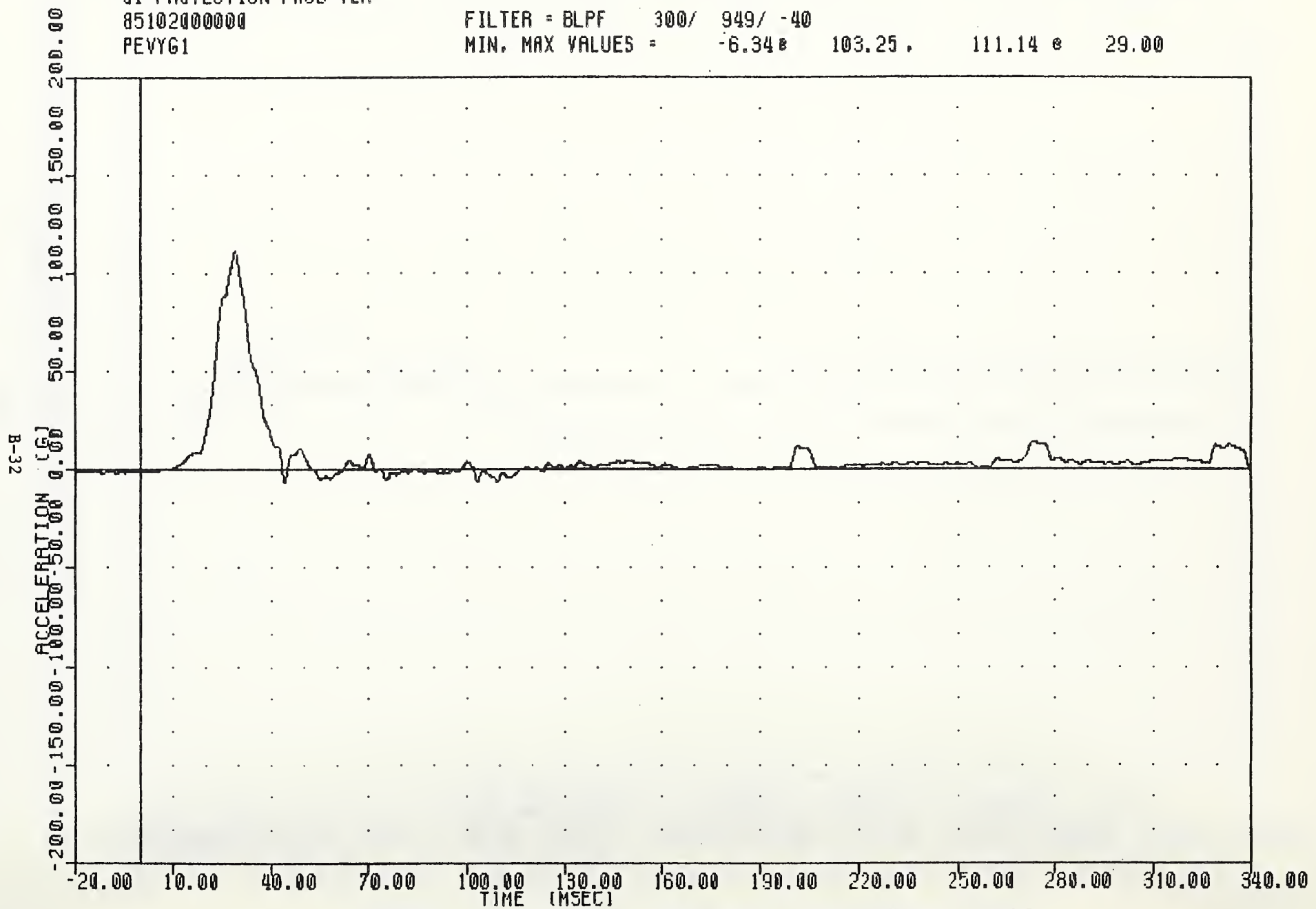


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER LEFT RIB TO SPINE DISPLACEMENT INCHES

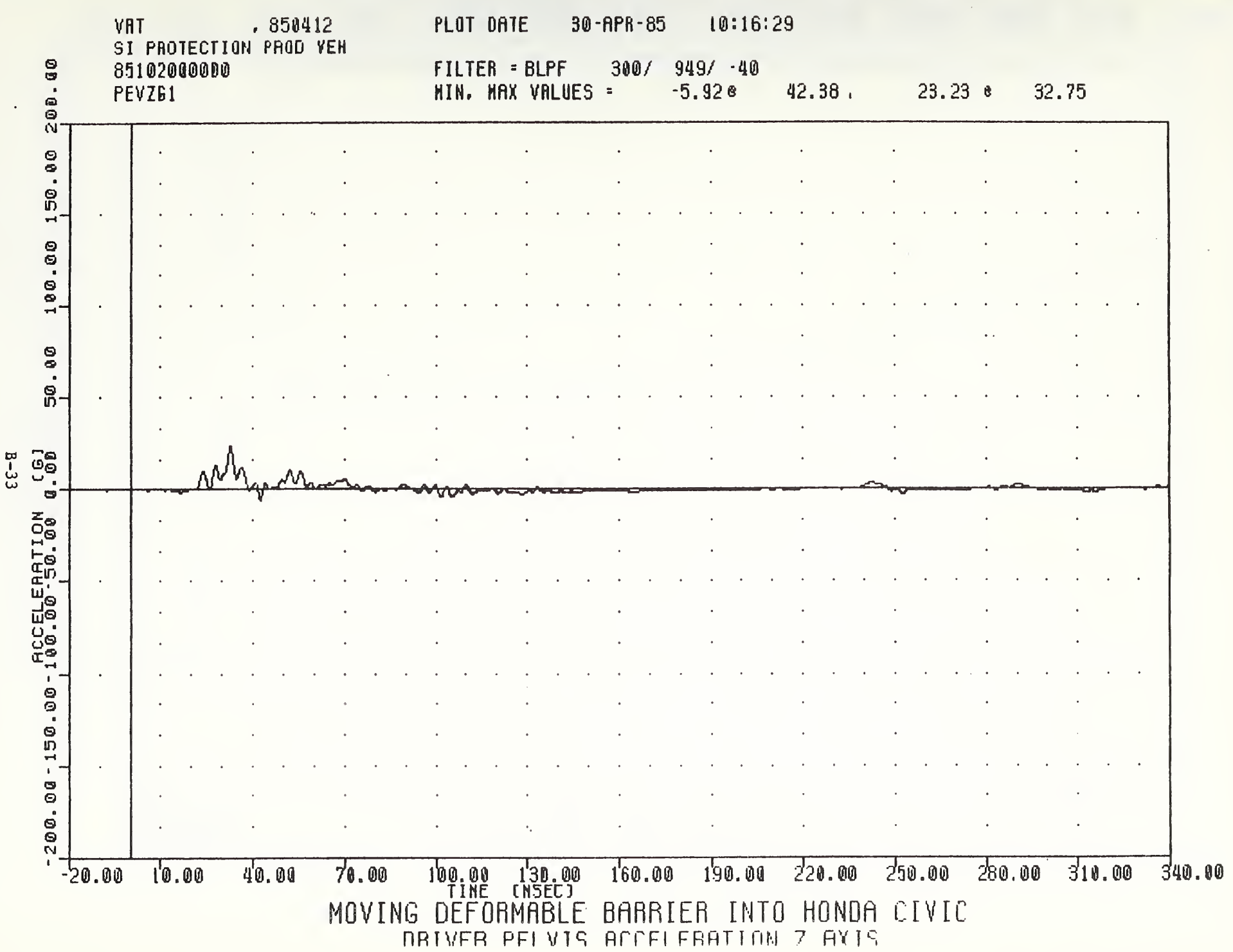
VAT , 850412 PLOT DATE 30-APR-85 10:16:29
SI PROTECTION PROD VEH
85102000000 FILTER = BLPF 300/ 949/ .40
PEVX61 MIN, MAX VALUES = -24.05 @ 38.38 , 10.26 @ 43.75

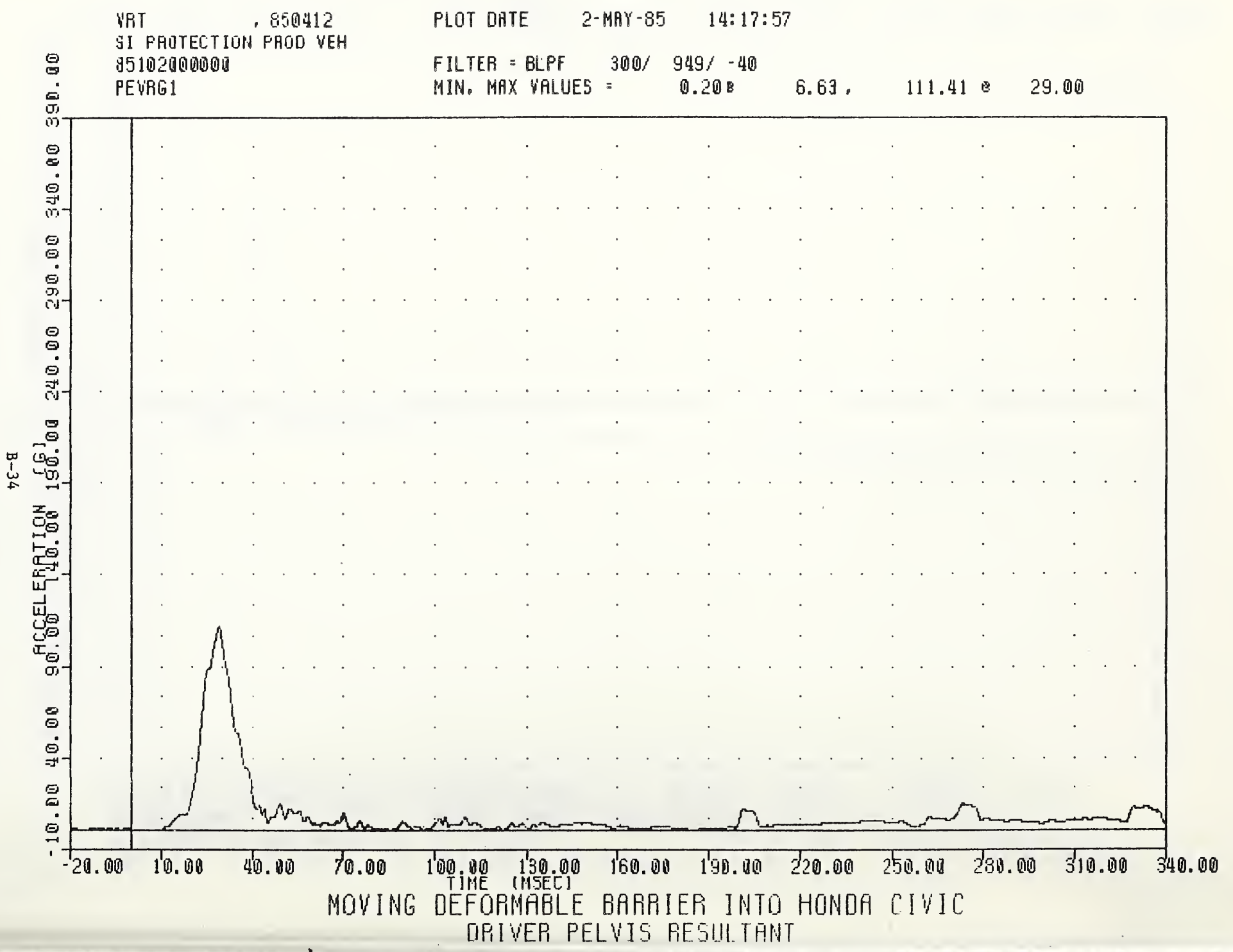


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER PELVIS ACCELERATION X AXIS

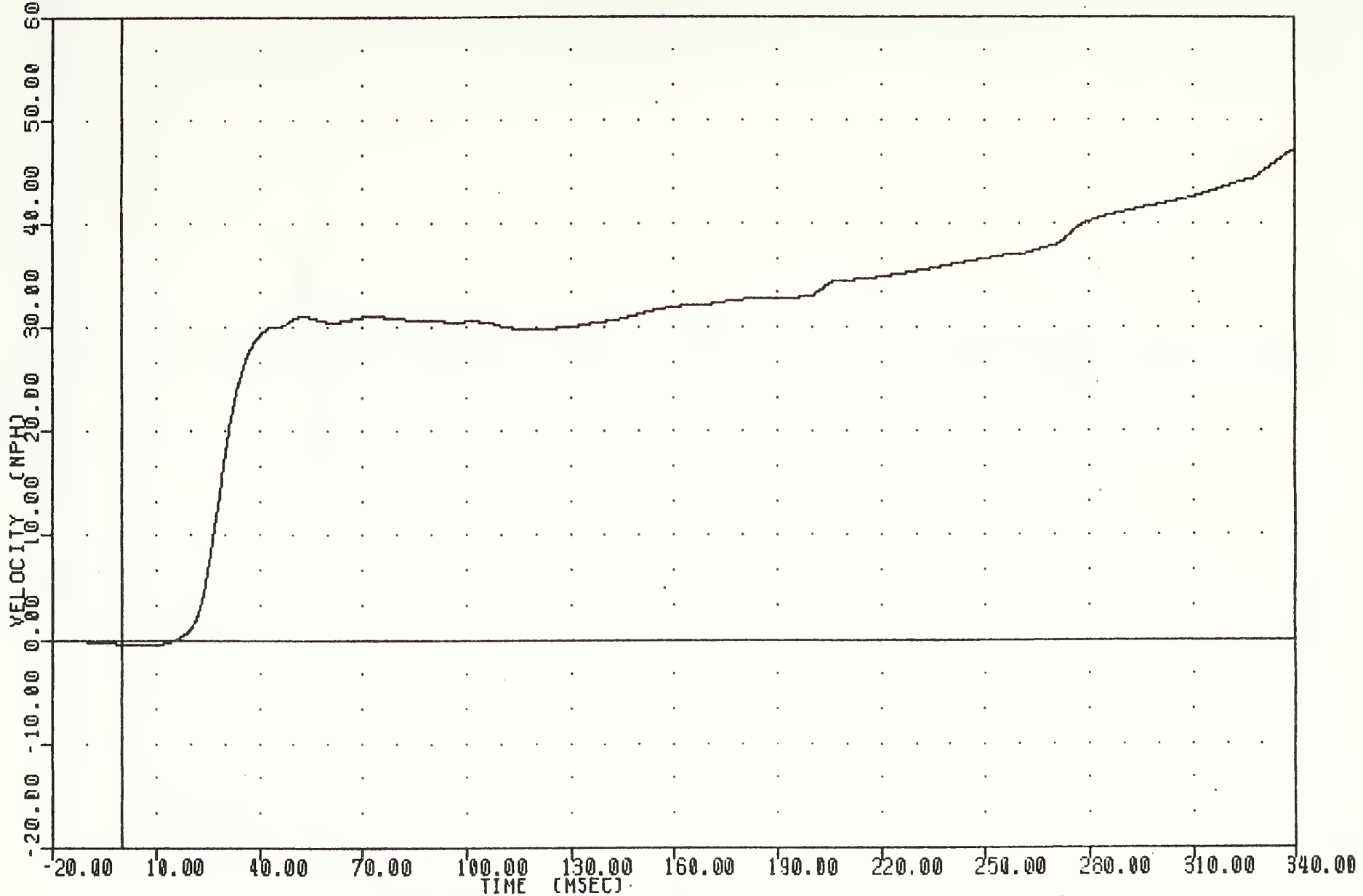


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER PELVIS ACCELERATION Y AXIS

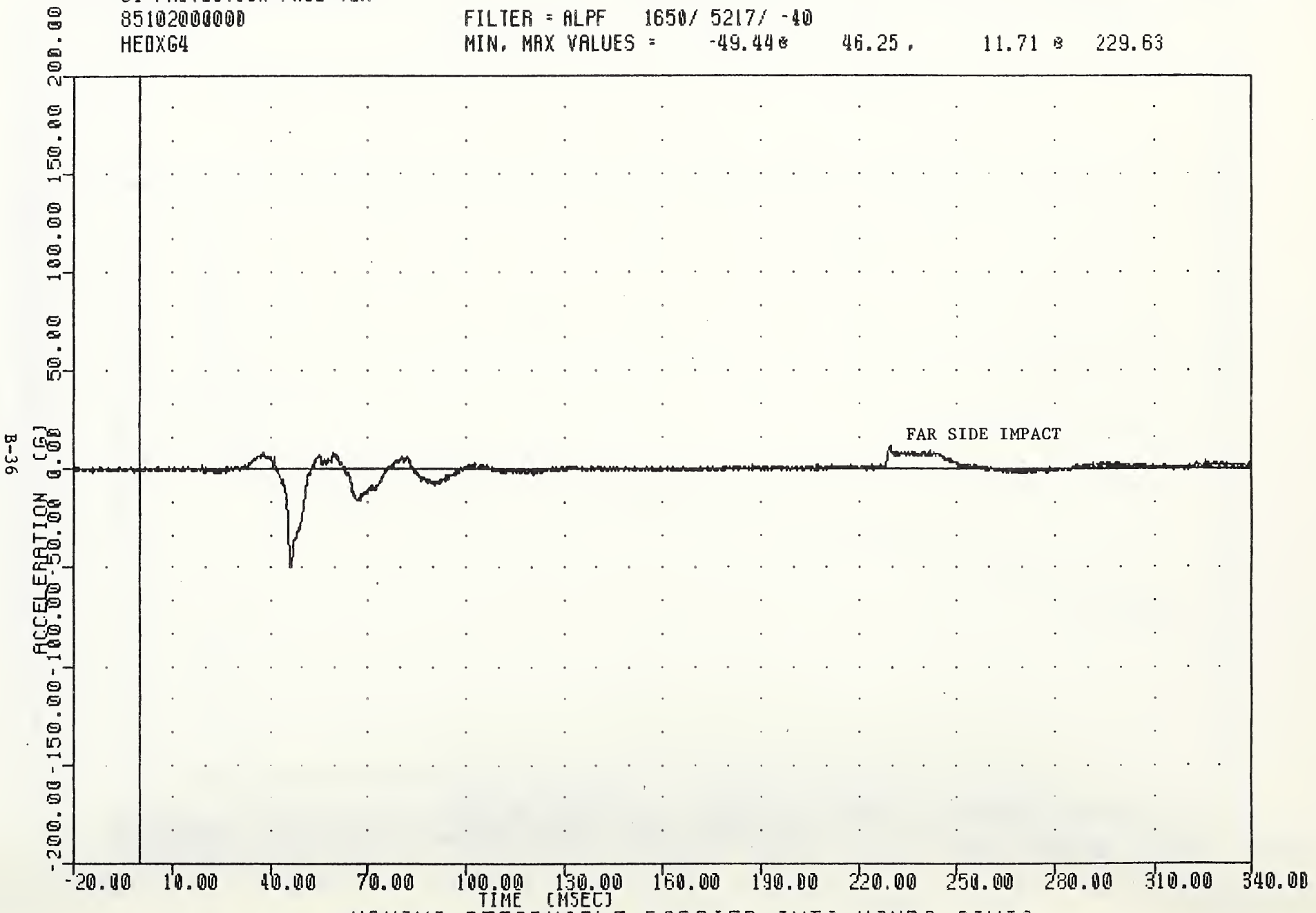

VAT , 850412
PLOT DATE 30-APR-85 10:16:29
SI PROTECTION PROD VEH
851020@0000
FILTER = BLPF 300/ 949/ -40
PEVZG1
MIN. MAX VALUES = -5.92 @ 42.38 , 23.23 @ 32.75
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
ACCELERATION (G)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER PELVIS ACCELERATION Z AXIS


VRT , 850412
SI PROTECTION PROD VEH
85102000000
PEVRG1
PLOT DATE 2-MAY-85 14:17:57
FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = 0.20 @ 6.63 , 111.41 @ 29.00
ACCELERATION (G)
-10.00 40.00 90.00 140.00 190.00 240.00 290.00 340.00 390.00
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DRIVER PELVIS RESULTANT

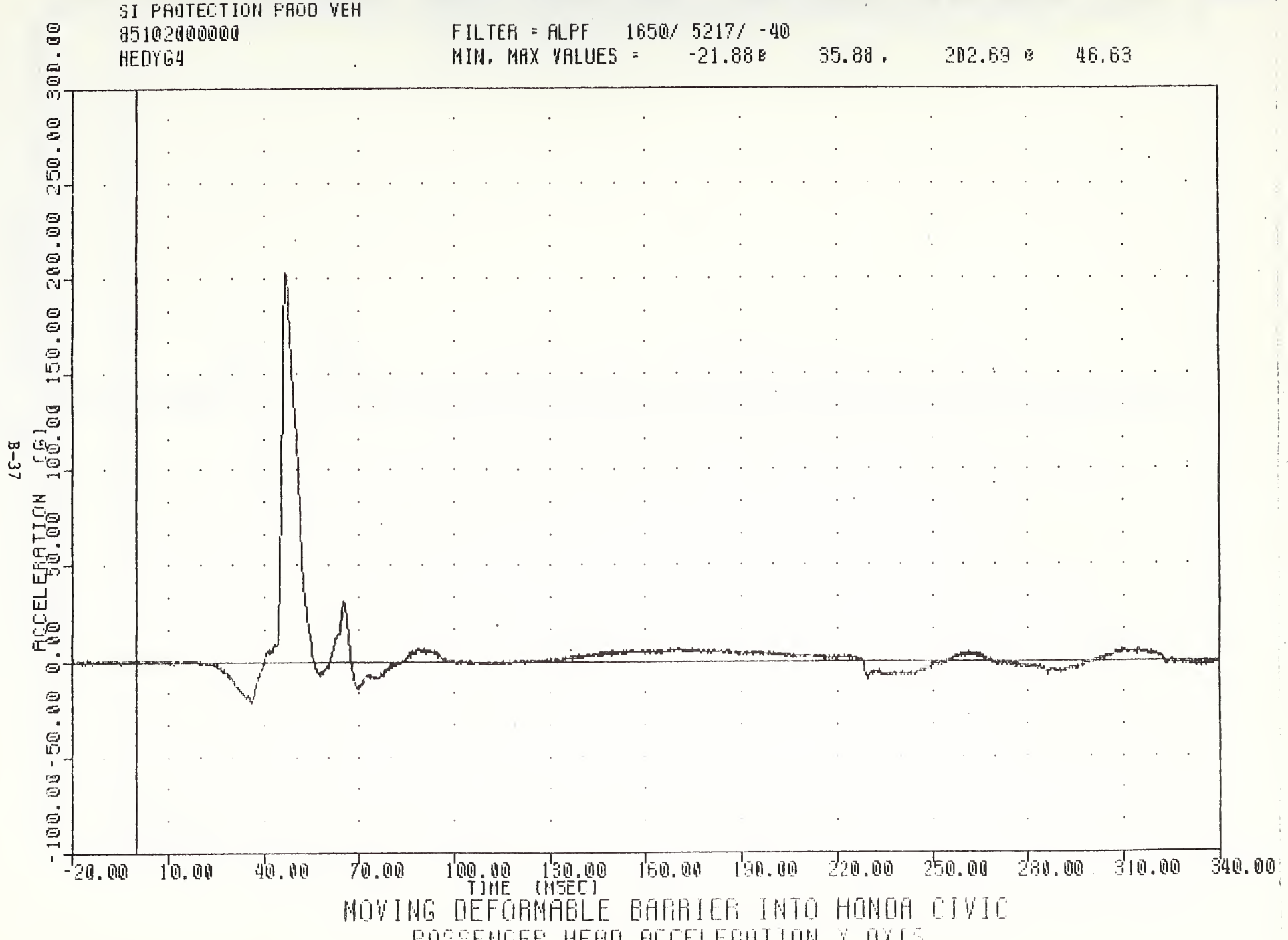
VRT , 850412 PLOT DATE 30-APR-85 10:16:29
SI PROTECTION PROD VEH
8510200@00D FILTER = BLPF 300/ 949/ -40
PEVYV1 MIN, MAX VALUES = -0.54@ 6.38 , 47.06 @ 340.00



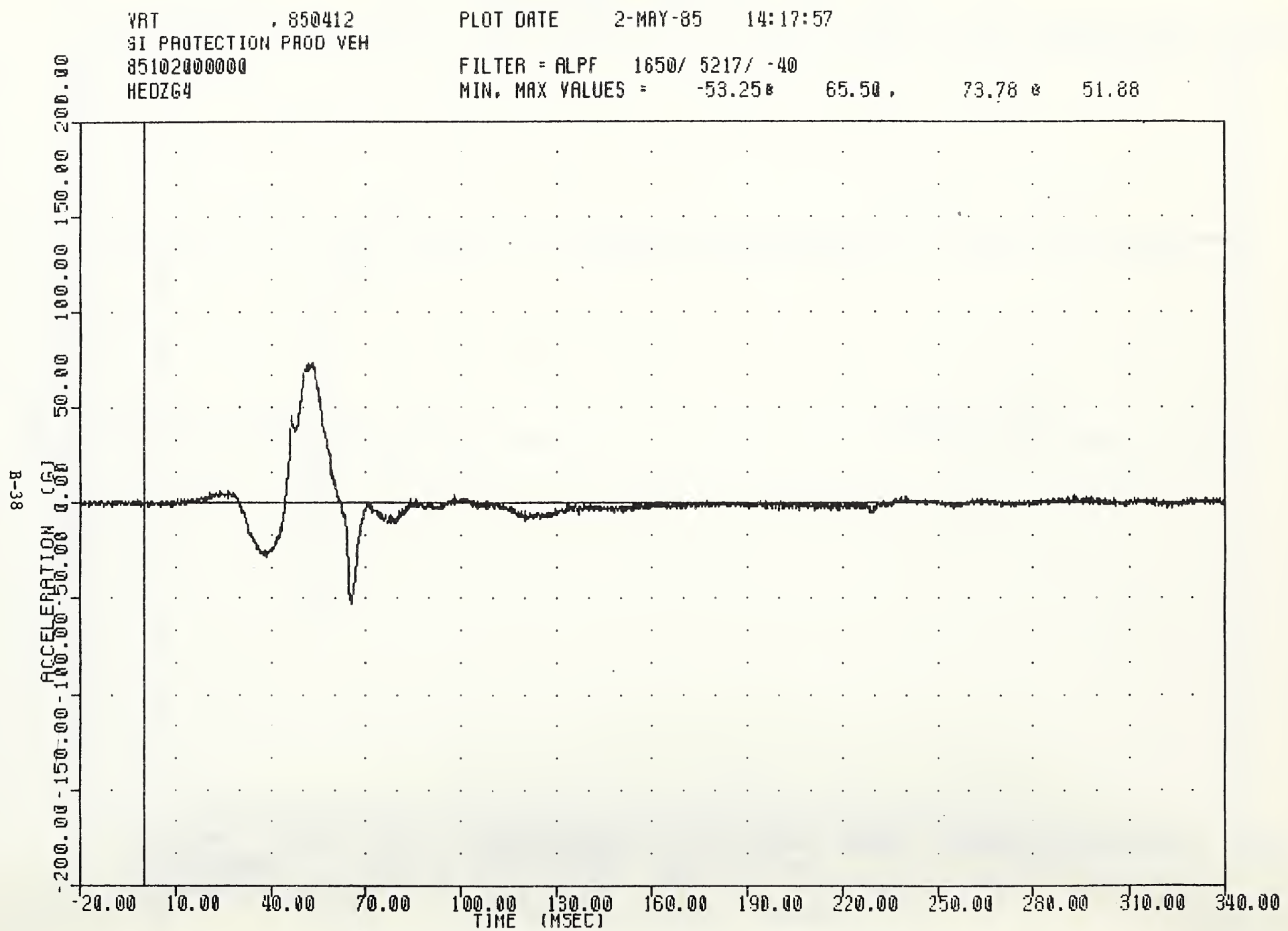
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING PEVYG1



MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER HEAD ACCELERATION X AXIS

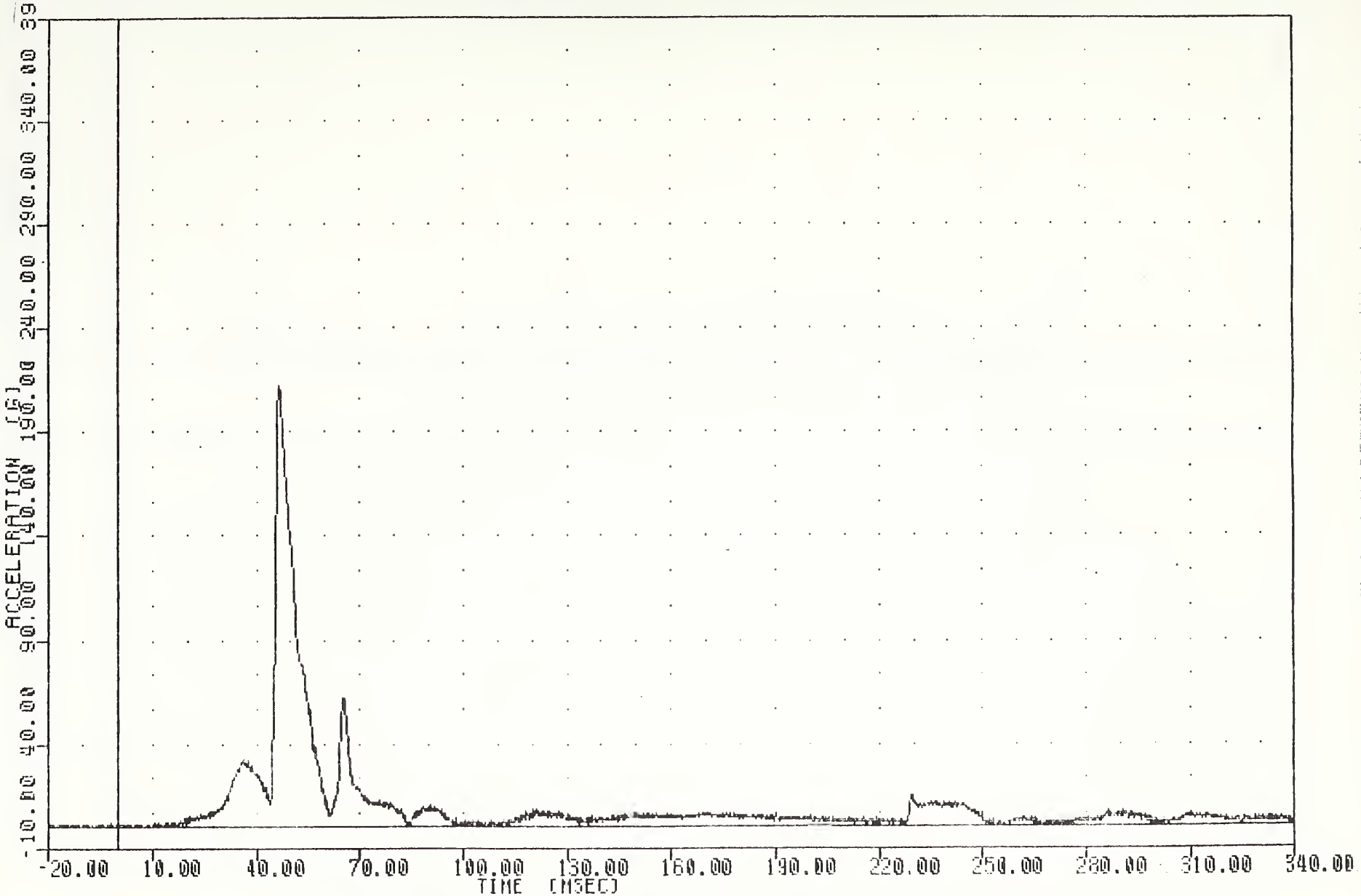


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER HEAD ACCELERATION Y AXIS



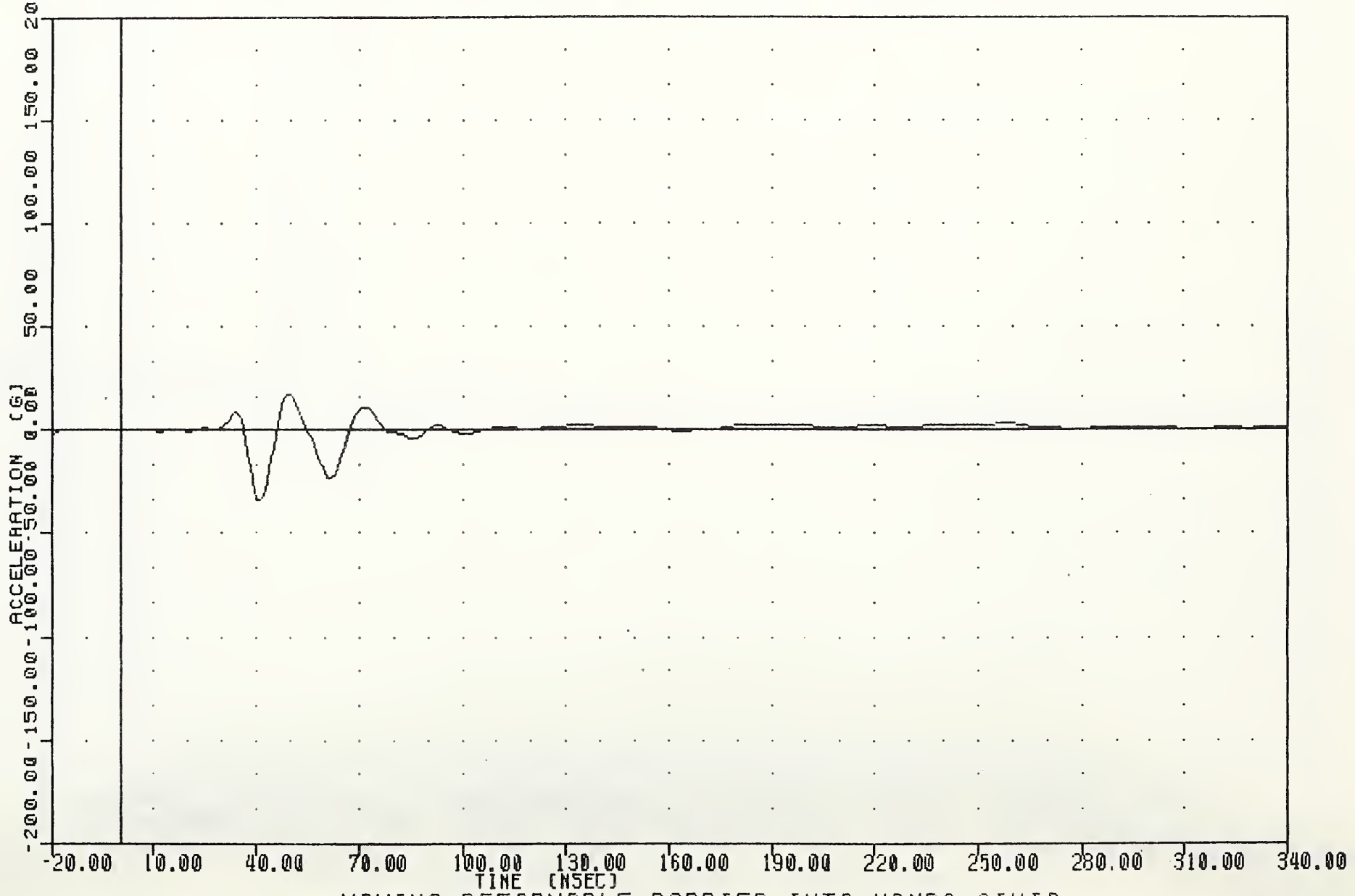
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER HEAD ACCELERATION Z AXIS

VRT , 850412 PLOT DATE 26-JUN-85 10:40:03
SI PROTECTION PROD VEH
85102000000 FILTER = ALPF 1650/ 5217/ -40
HEDRG4 MIN, MAX VALUES = 0.11@ -6.50 , 212.91 @ 46.63

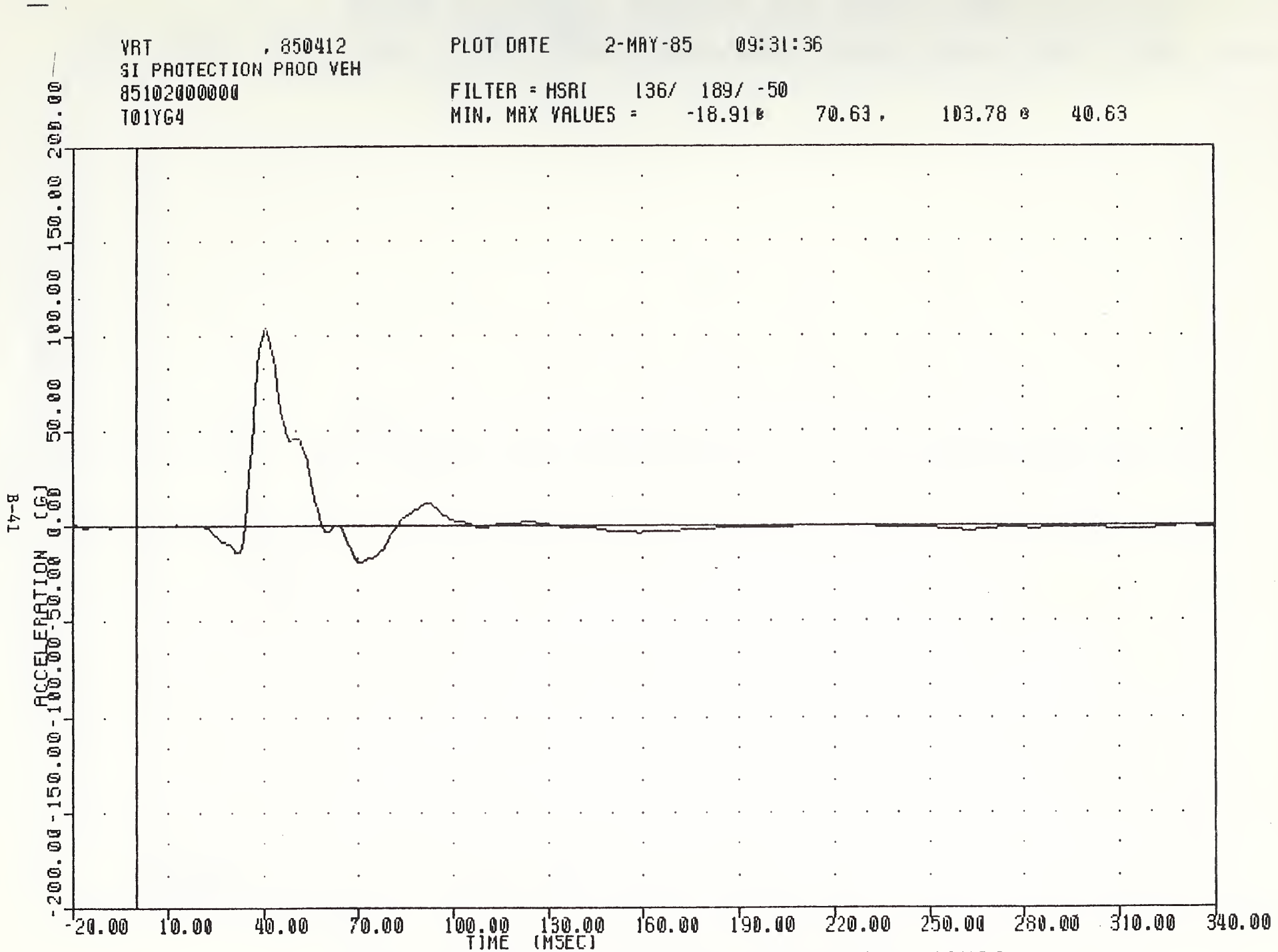


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER HEAD RESULTANT

VRT , 850412 PLOT DATE 2-MAY-85 09:31:36
SI PROTECTION PROD VEH
85102000000 FILTER = HSRI 136/ 189/ -50
T01X64 MIN, MAX VALUES = -33.80 @ 40.63 , 17.65 @ 49.37



MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER UPPER SPINE ACCELERATION X AXIS

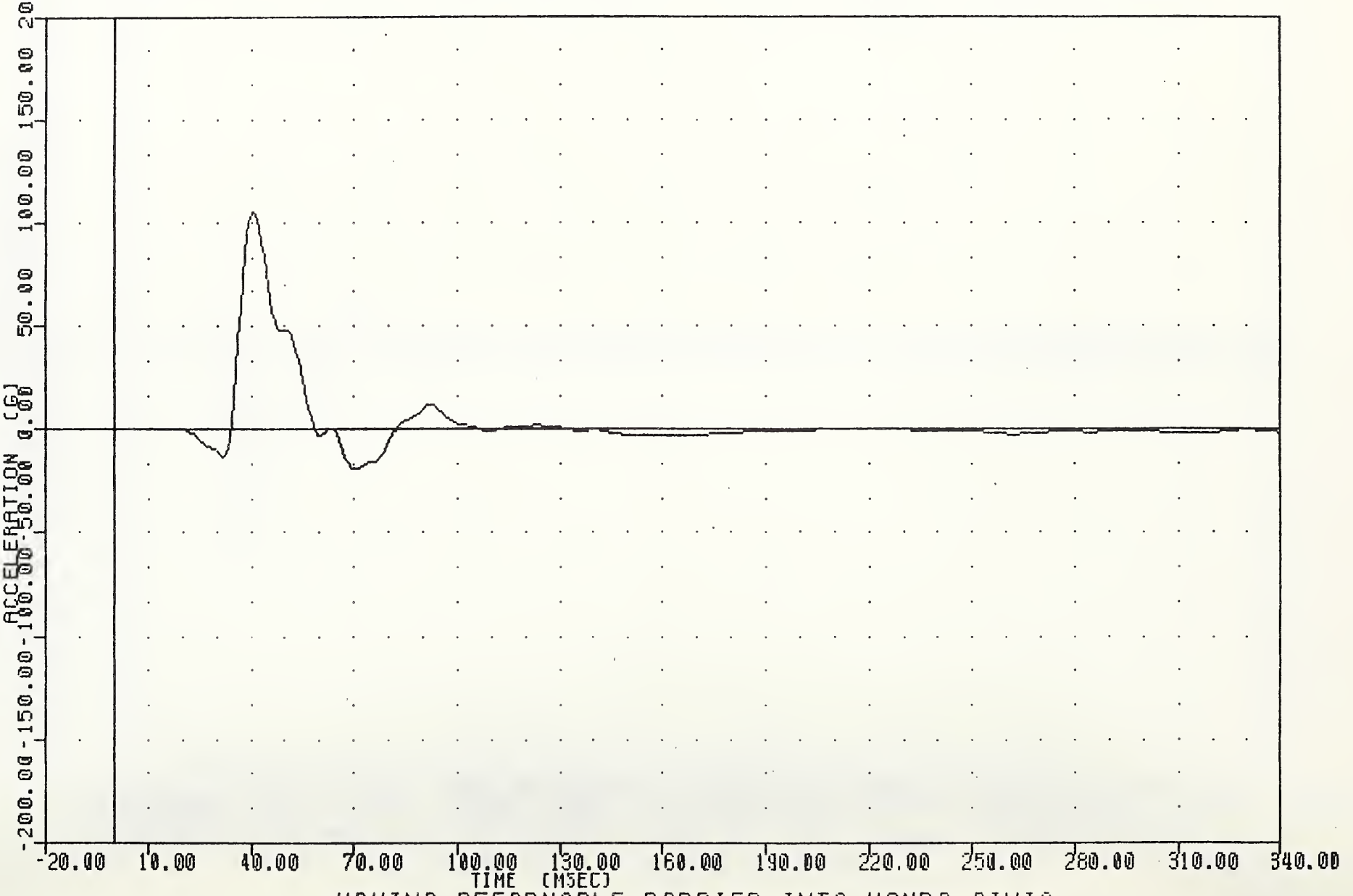


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER UPPER SPINE ACCELERATION Y AXIS

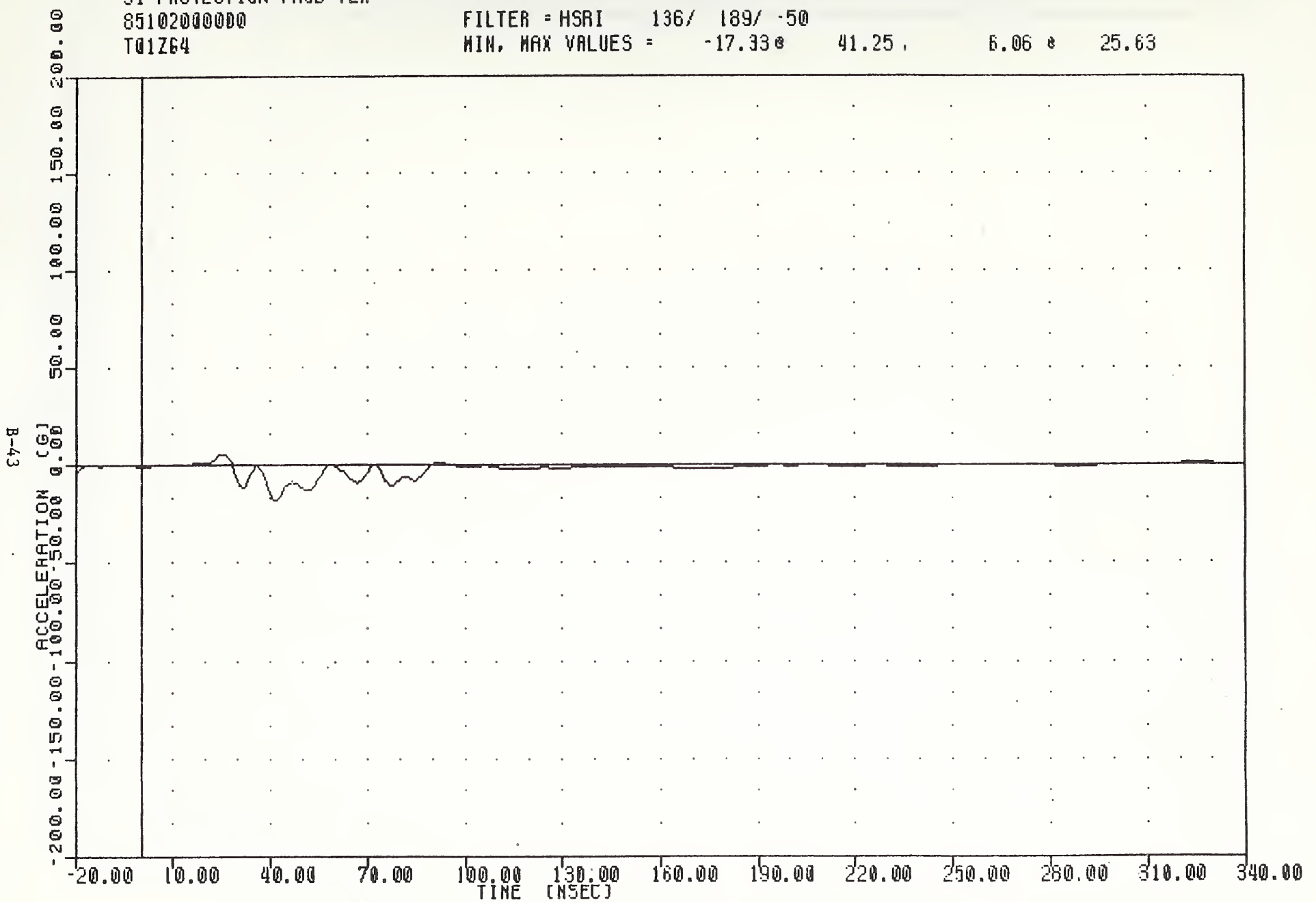
VRT , 850412
SI PROTECTION PROD VEH
85102000000
T01YGD

PLOT DATE 2-MAY-85 09:31:36

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -19.31@ 70.63 , 105.62 @ 40.63

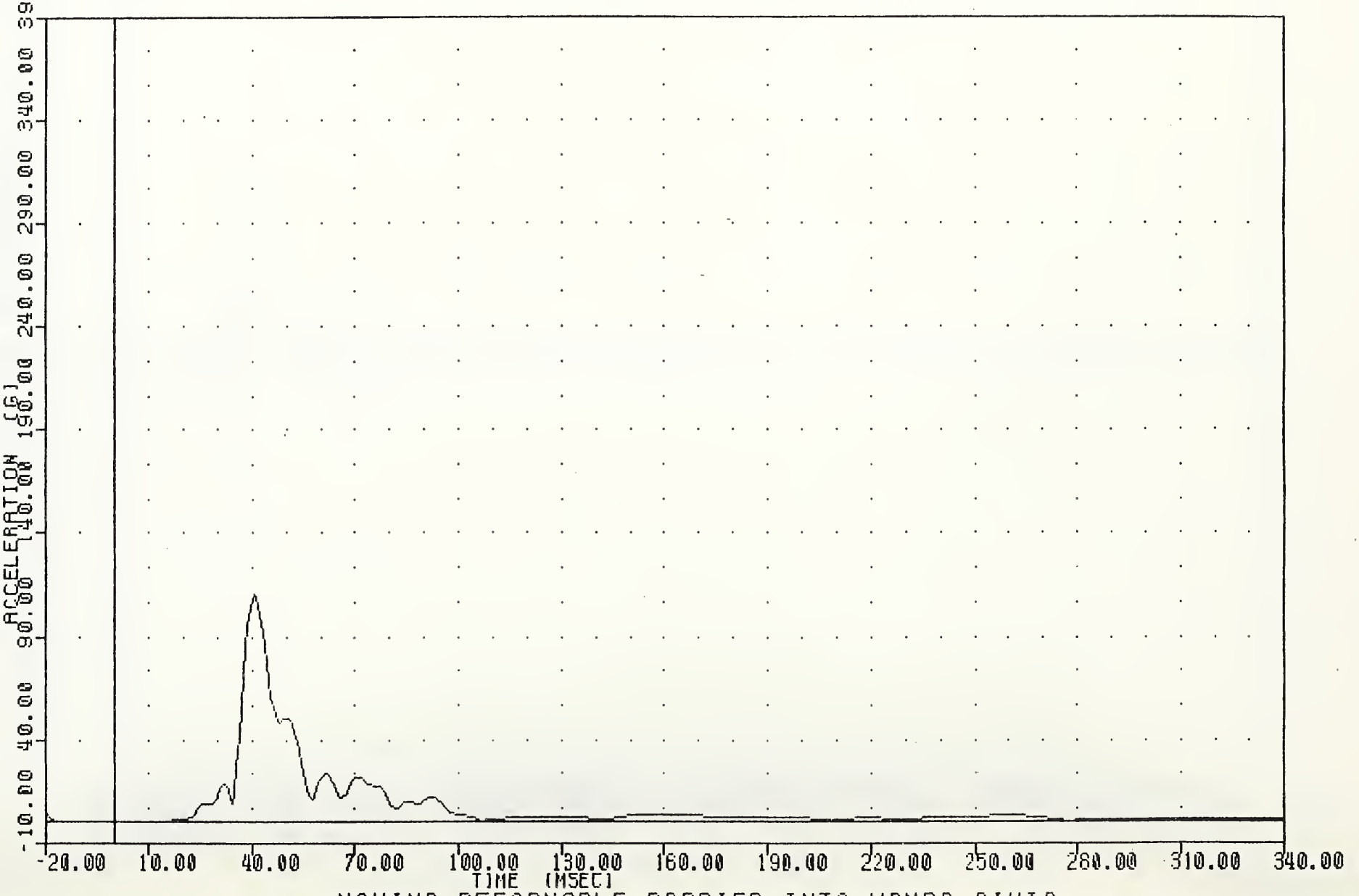


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER UPPER SPINE ACCELERATION -2 Y AXIS



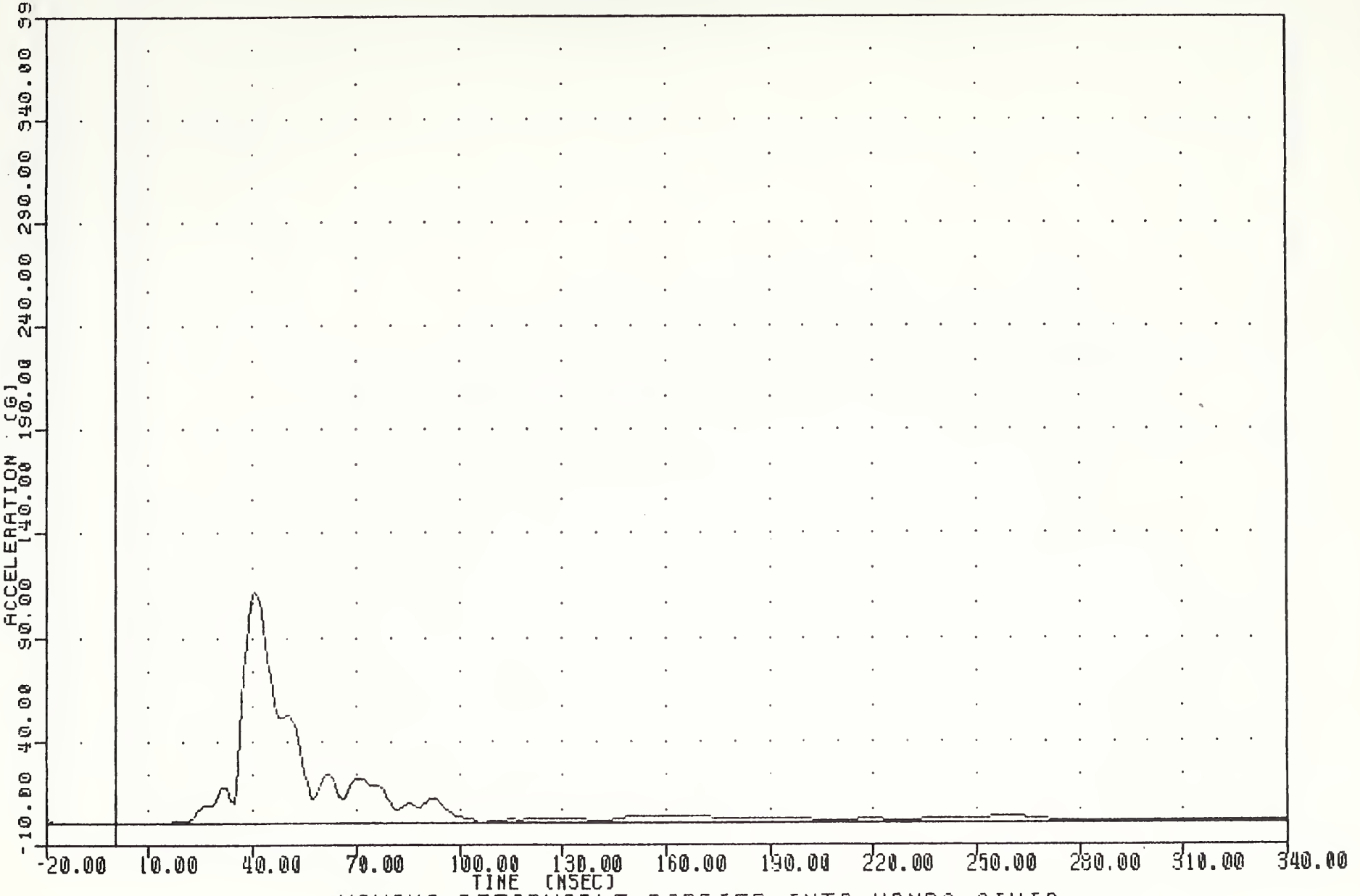
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER UPPER SPINE ACCELERATION Z AXIS

VRT , 850412 PLOT DATE 2-MAY-85 09:31:36
SI PROTECTION PROD VEH
85102000000 FILTER = HSRI 136/ 189/ -50
T01RG4 MIN, MAX VALUES = 0.18 @ -5.00 , 110.37 @ 40.63



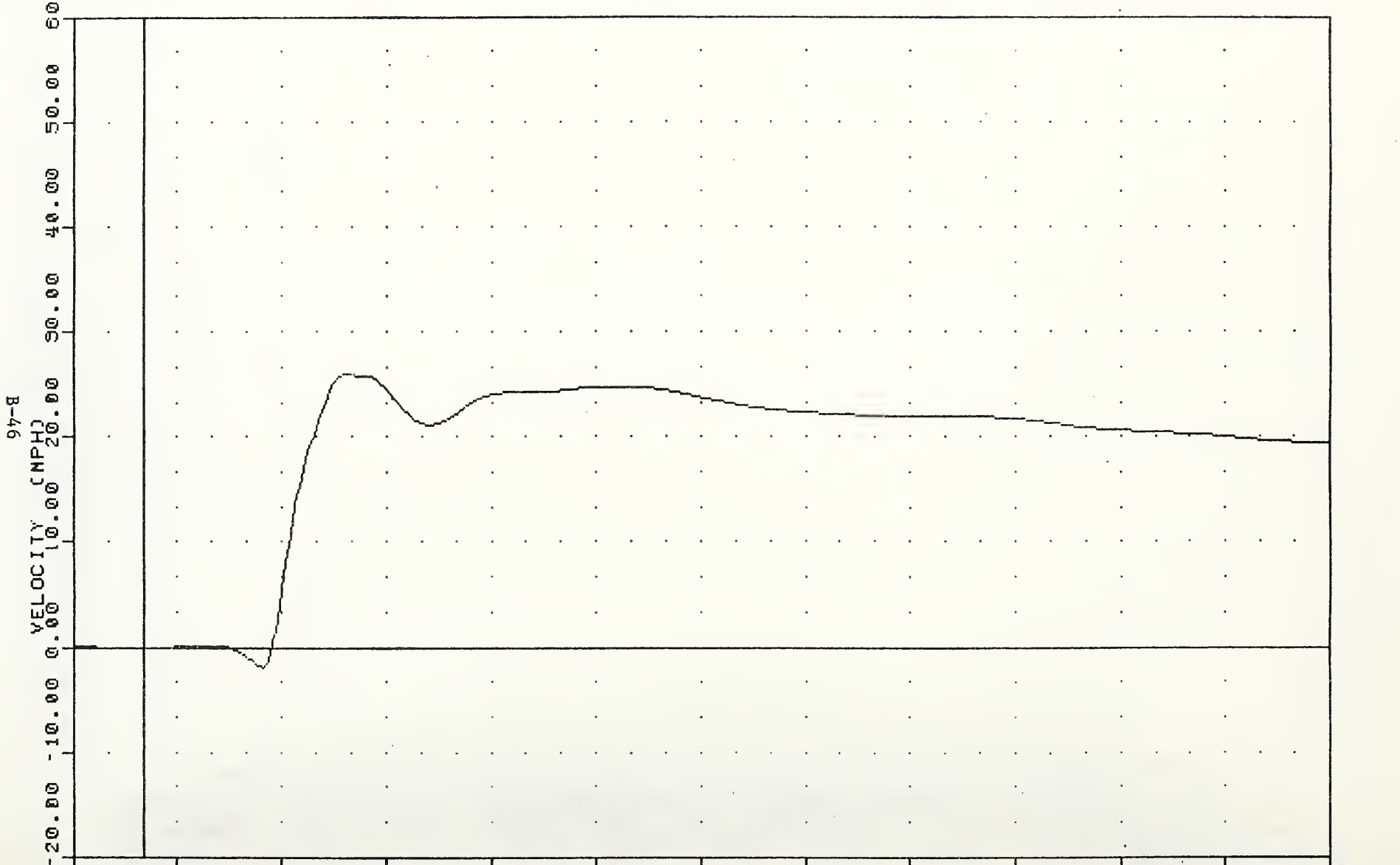
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER UPPER SPINE RESULTANT

VAT , 850412 PLOT DATE 2-MAY-85 09:16:45
SI PROTECTION PROD VEH
851020Q0000 FILTER = HSRI 136/ 189/ -50
TQ1RGD MIN, MAX VALUES = 0.06 @ -16.87 , 112.10 @ 40.63



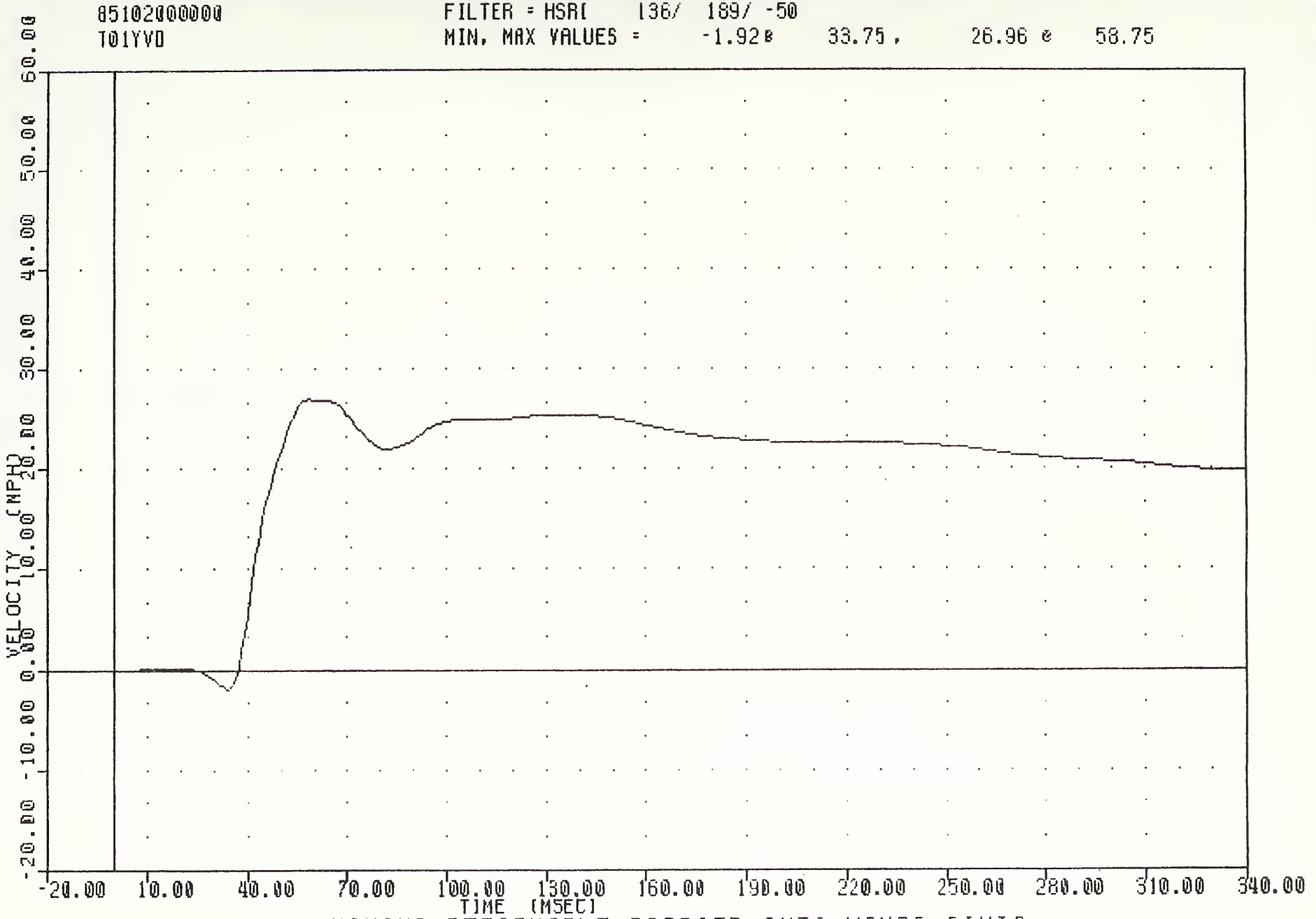
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER UPPER SPINE RESULTANT USING T01YGD

VAT , 850412 PLOT DATE 2-MAY-85 09:53:06
SI PROTECTION PROD VEH
85102000000 FILTER = HSRI 136/ 189/ -50
TG1YY4 MIN, MAX VALUES = -1.91 @ 34.38 , 26.02 @ 58.75

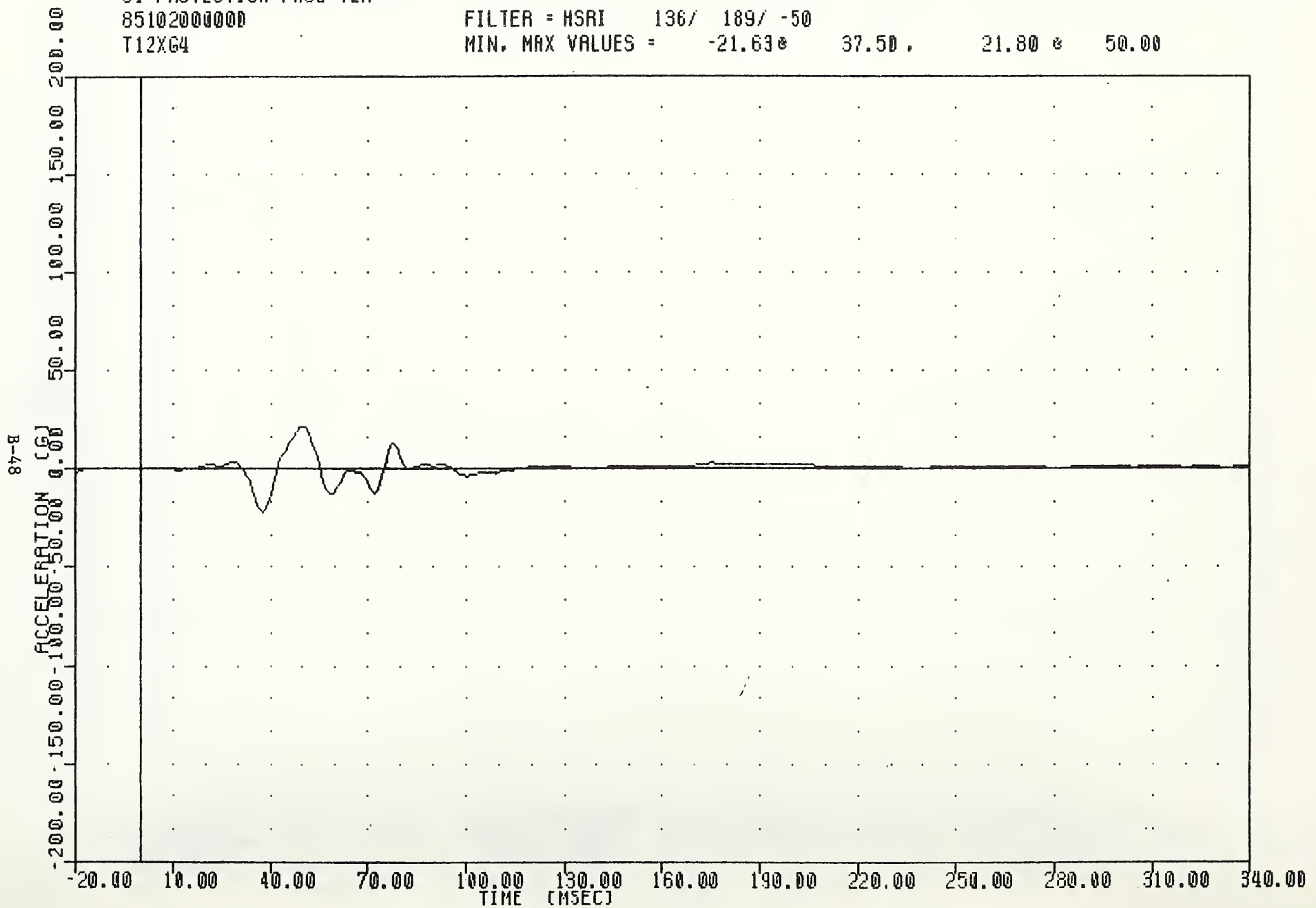


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING TG1YG4

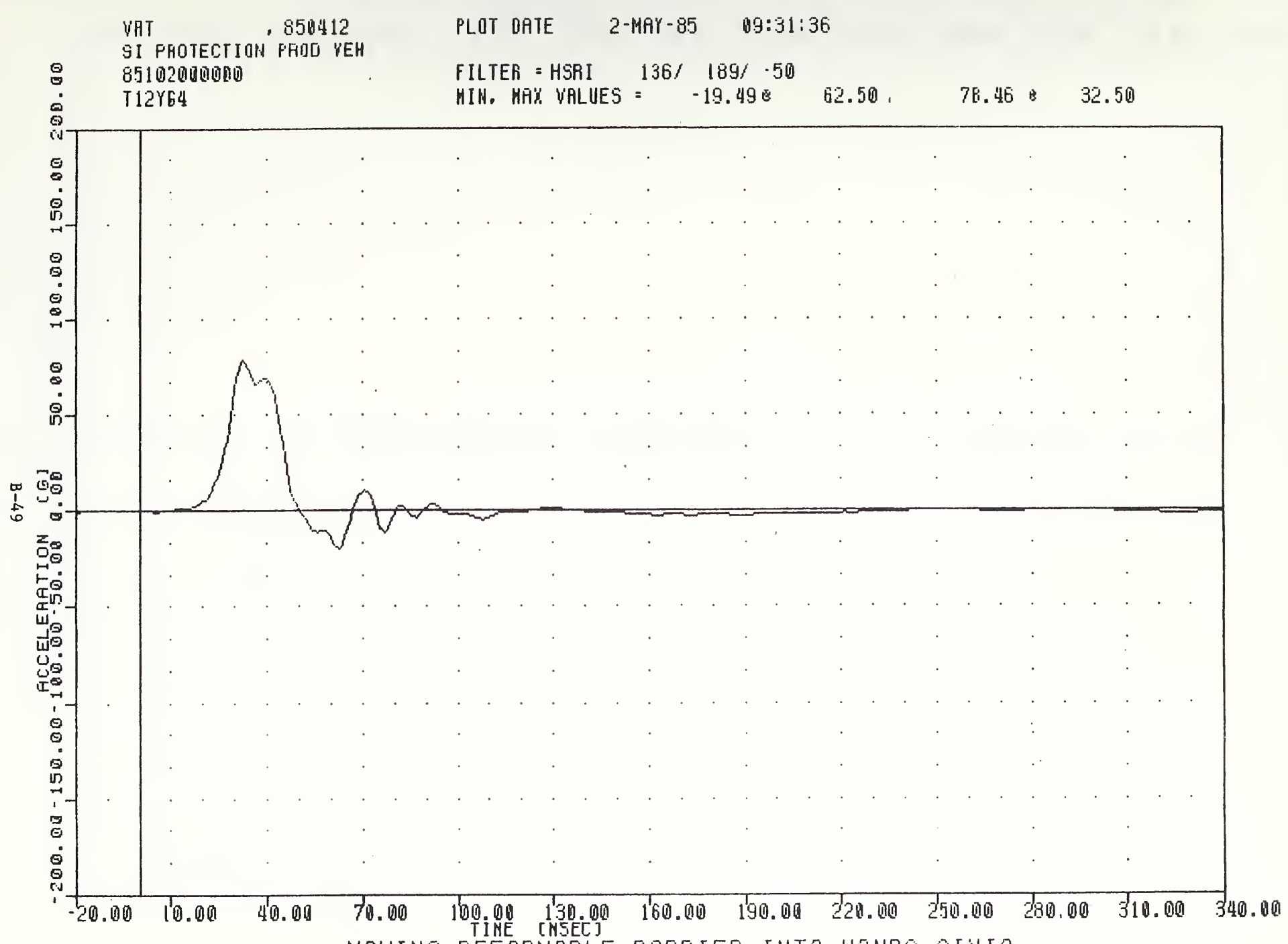
VRT , 850412 PLOT DATE 2-MAY-85 09:53:06
SI PROTECTION PROD VEH
851020000000 FILTER = HSRI 136/ 189/ -50
T01YVD MIN, MAX VALUES = -1.92 @ 33.75 , 26.96 @ 58.75



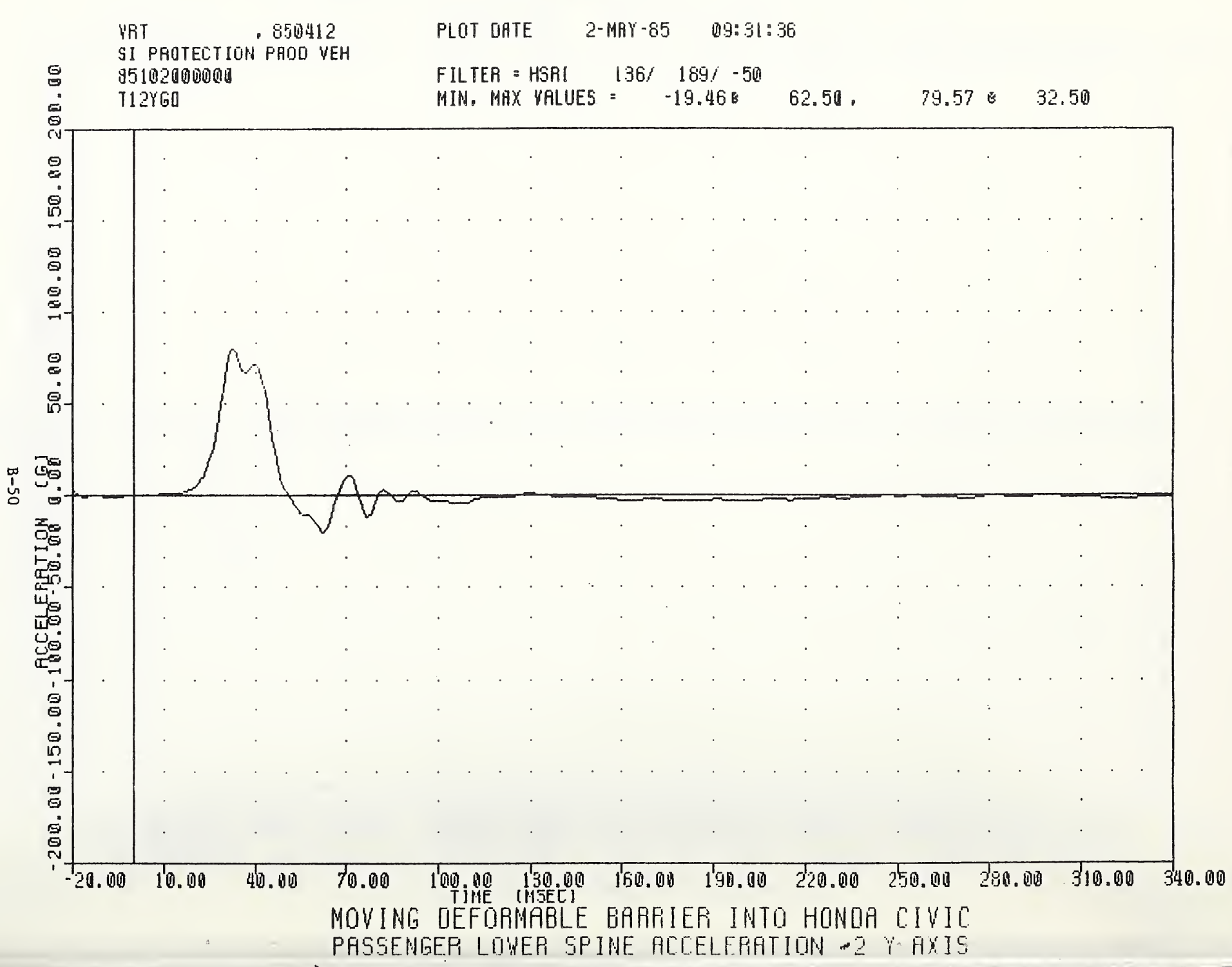
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING T01YGD

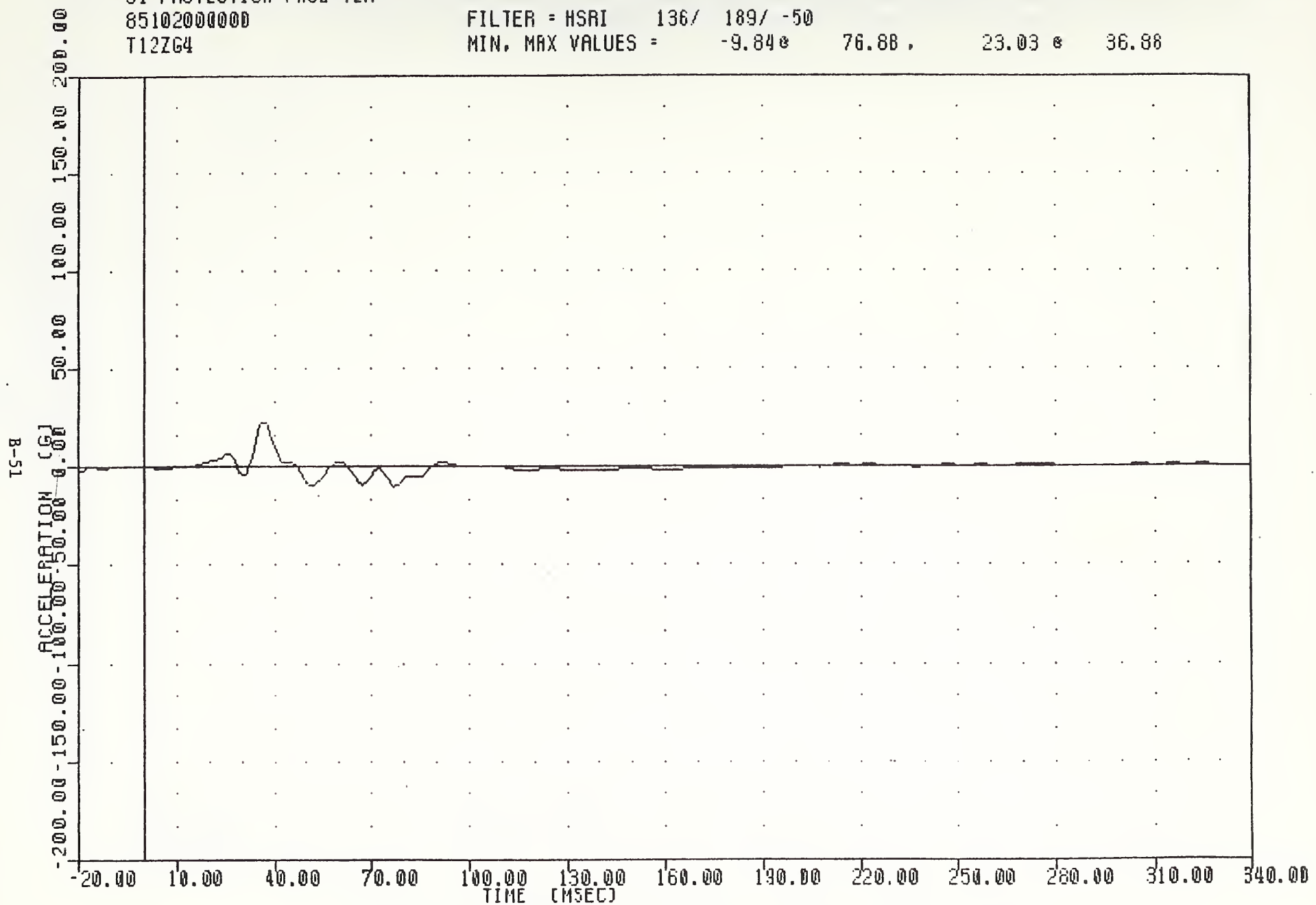


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER LOWER SPINE ACCELERATION X AXIS

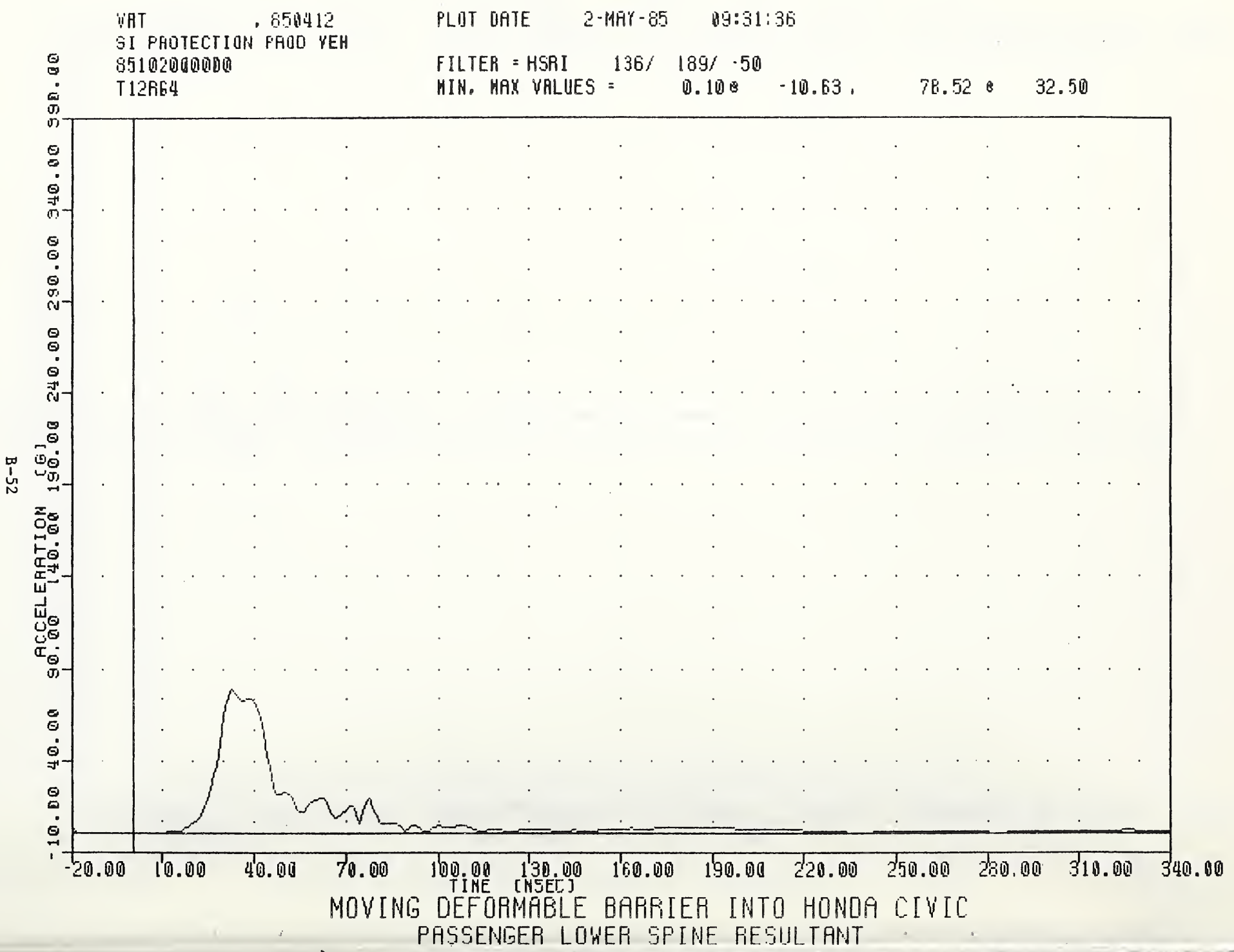


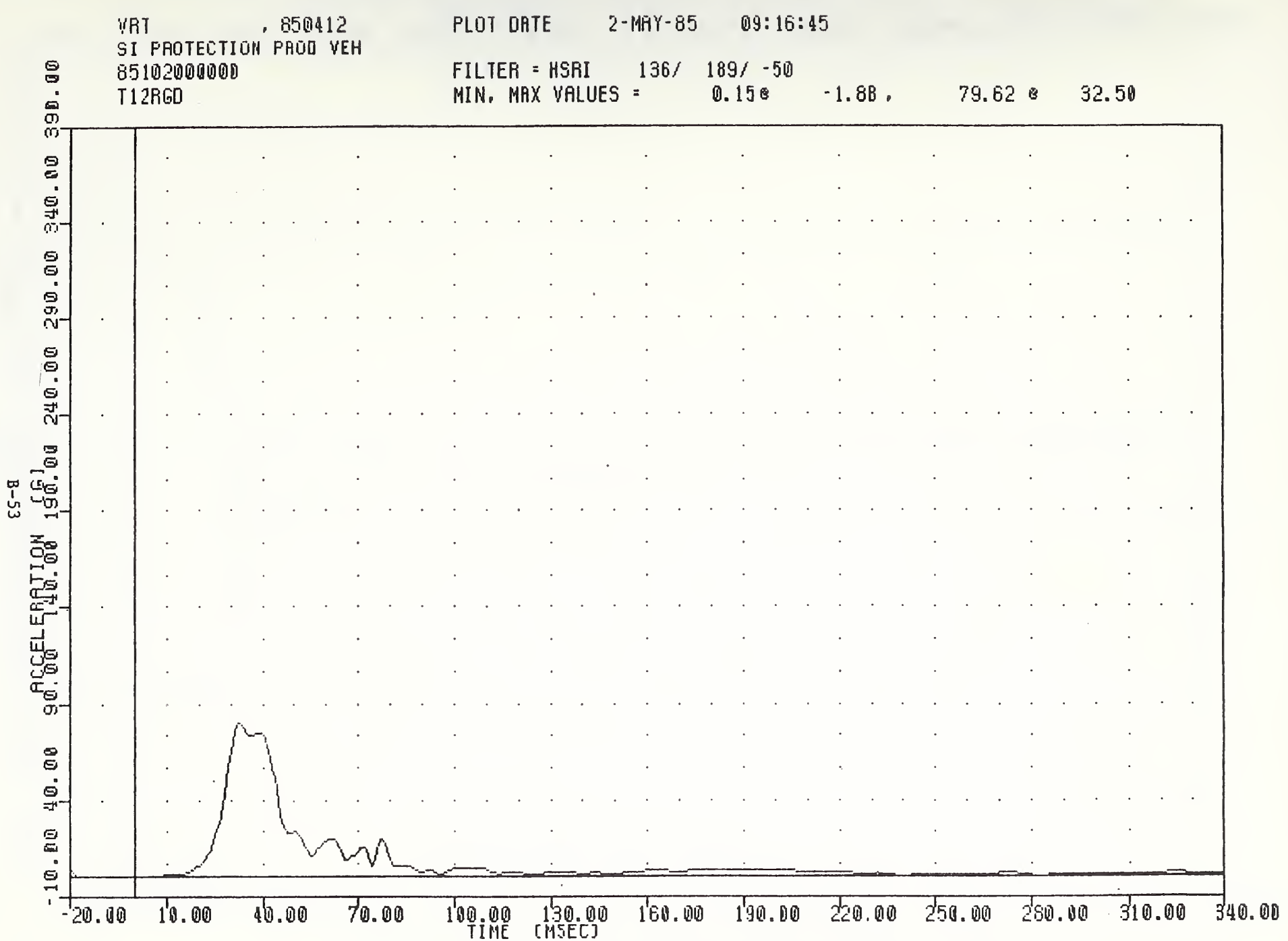
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER LOWER SPINE ACCELERATION Y AXIS


VRT , 850412
SI PROTECTION PROD VEH
85102000000
T12YG0
PLOT DATE 2-MAY-85 09:31:36
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -19.46 @ 62.50 , 79.57 @ 32.50
ACCELERATION (G)
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER LOWER SPINE ACCELERATION -Z Y AXIS



MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER LOWER SPINE ACCELERATION Z AXIS


VAT , 850412
SI PROTECTION PROD YEH
851020G0000
T12R64
PLOT DATE 2-MAY-85 09:31:36
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = 0.10 @ -10.63 , 78.52 @ 32.50
ACCELERATION (G)
-10.00 40.00 90.00 140.00 190.00 240.00 290.00 340.00 390.00
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER LOWER SPINE RESULTANT

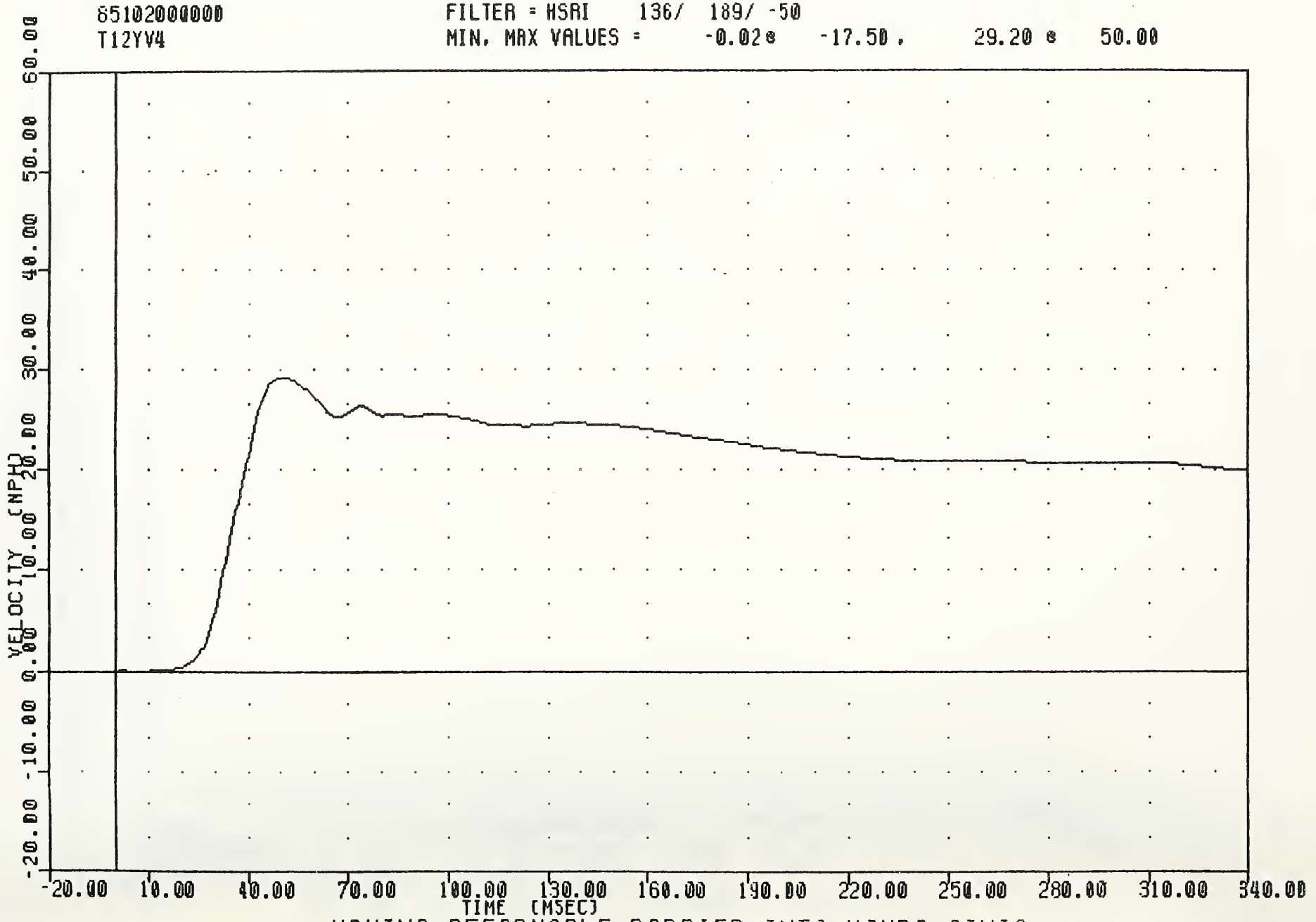


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER LOWER SPINE RESULTANT USING T12YGD

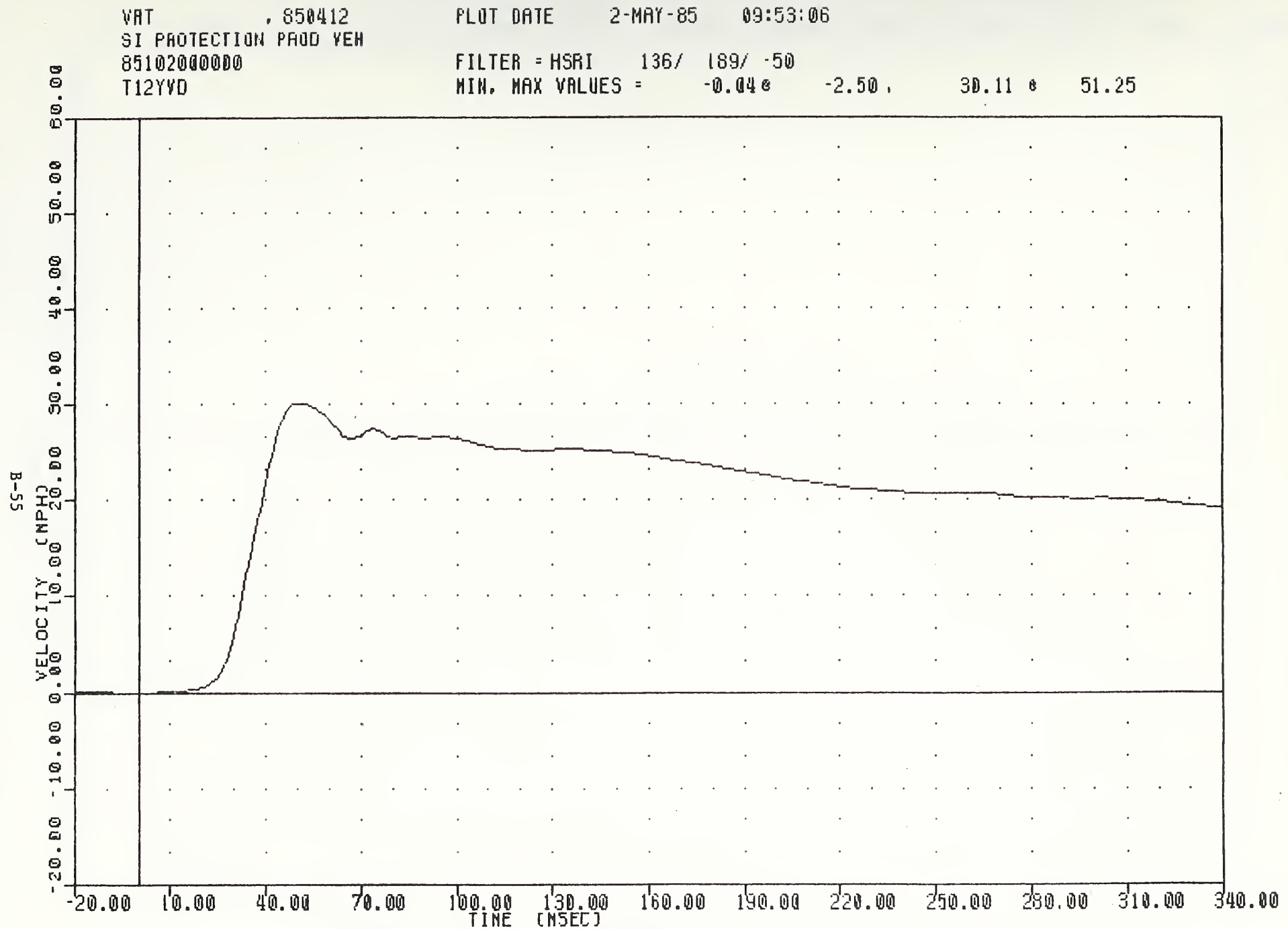
VRT , 850412
SI PROTECTION PROD VEH
85102000000
T12YV4

PLOT DATE 2-MAY-85 09:53:06

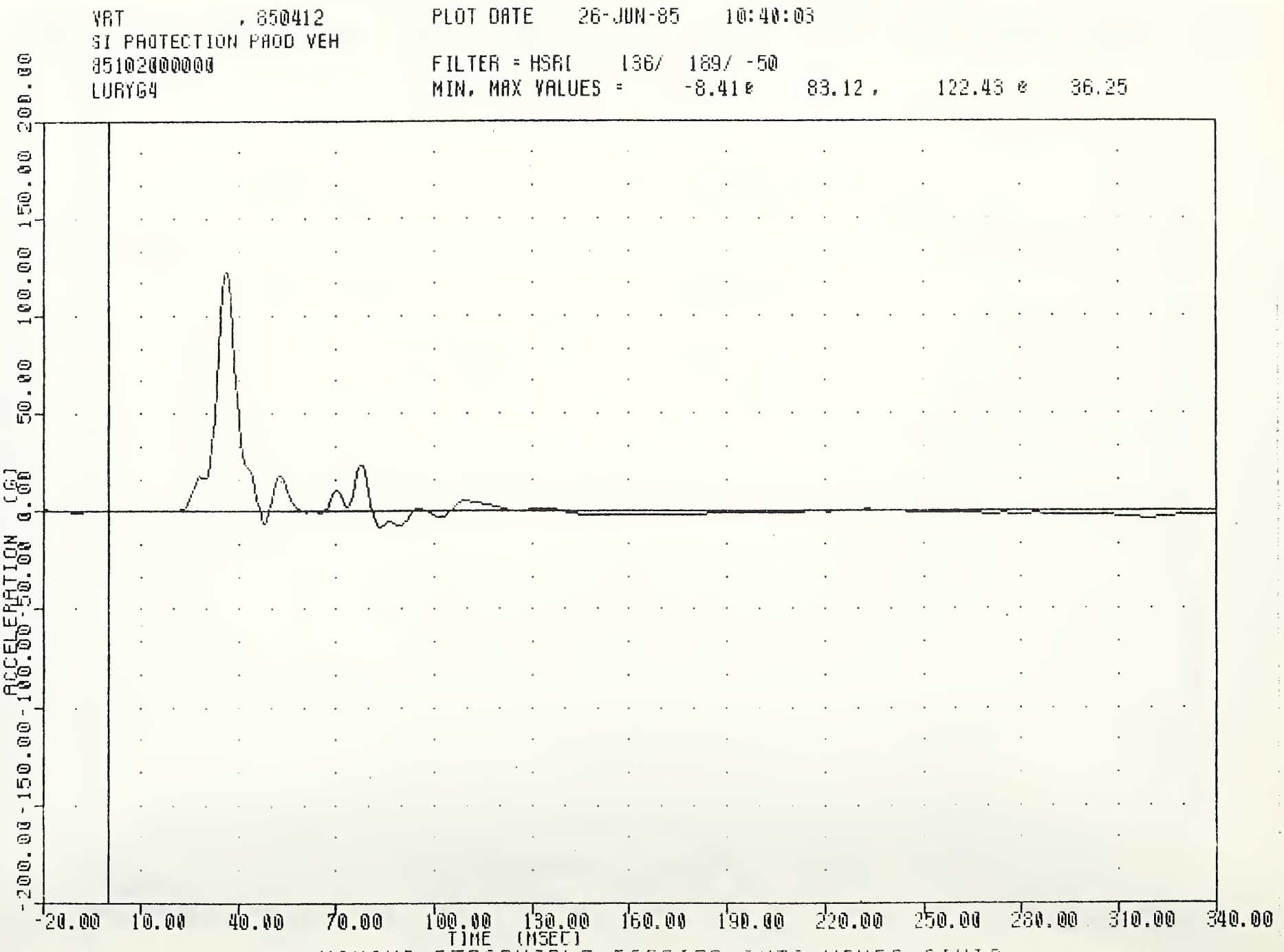
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -0.02 @ -17.50 , 29.20 @ 50.00



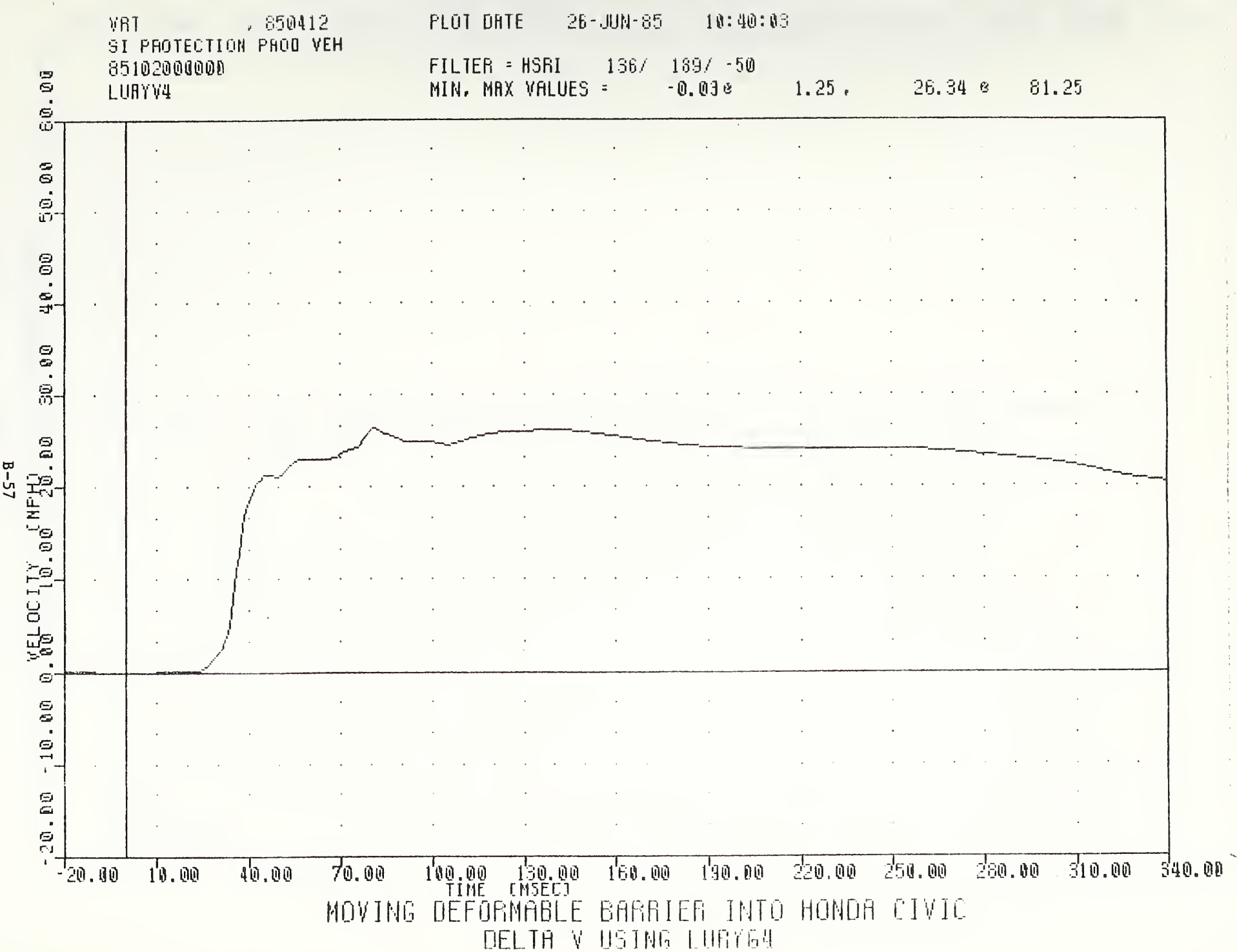
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING T12YG4

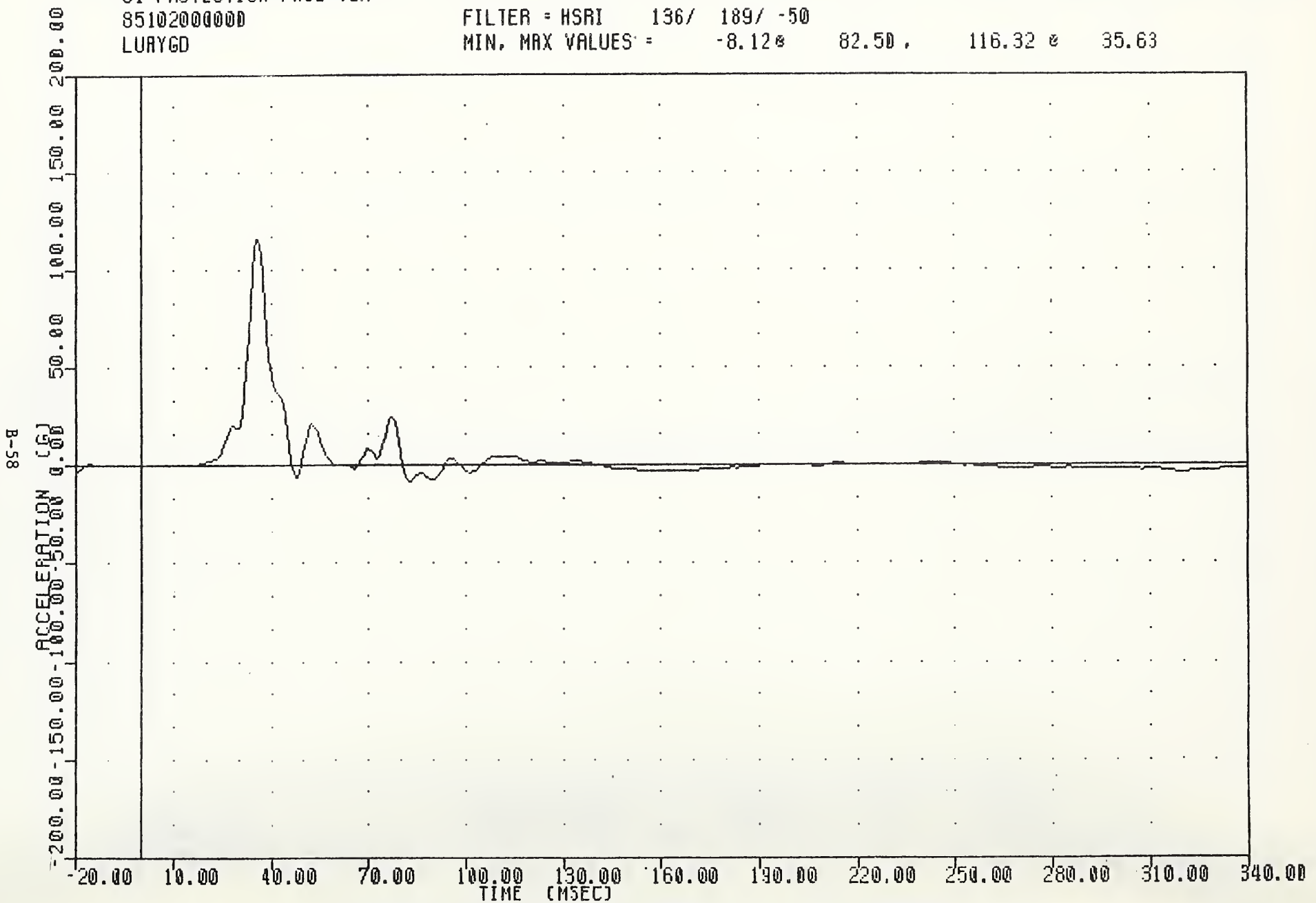


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING T12YGD



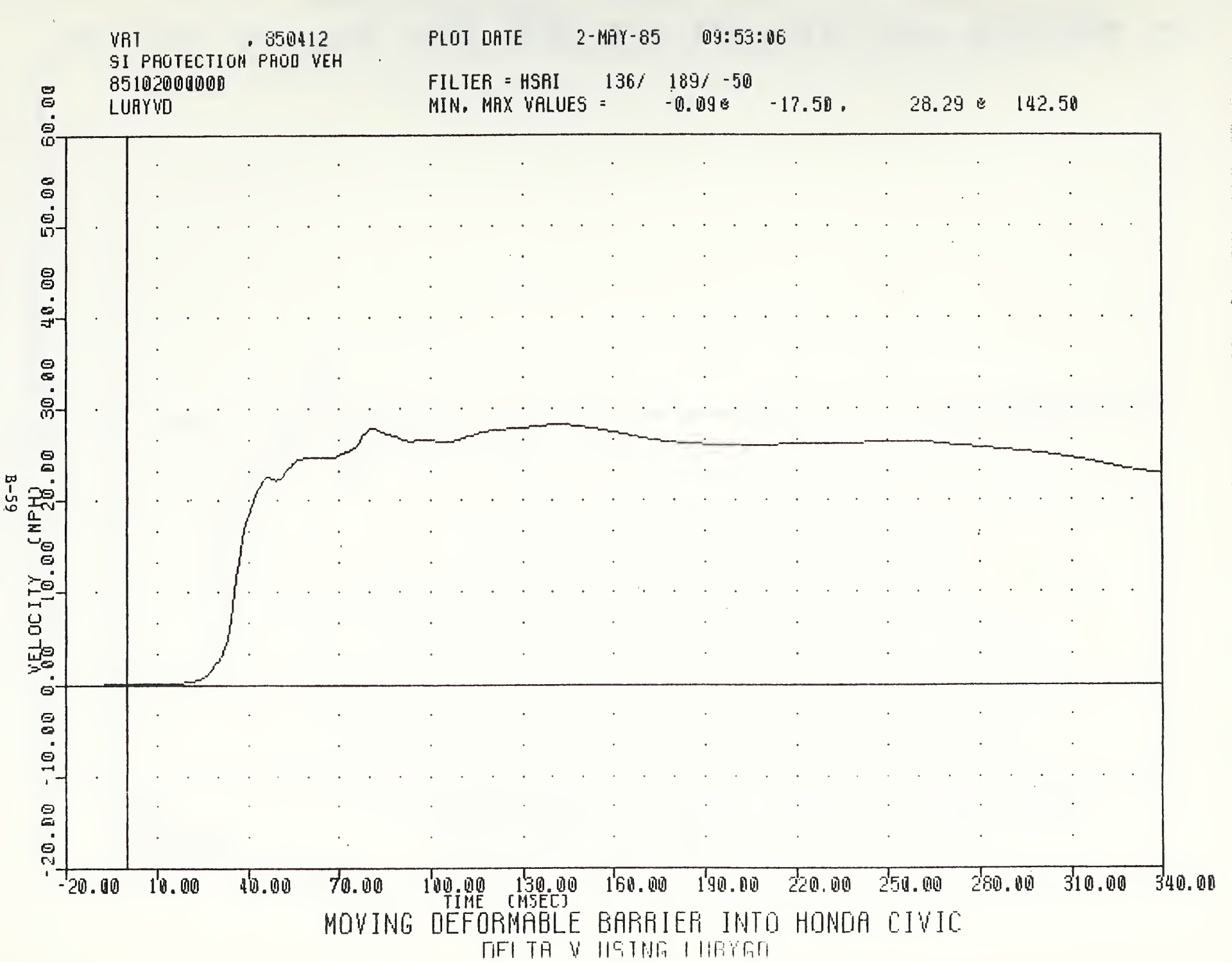
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER LEFT UPPER RIB ACCELERATION Y AXIS

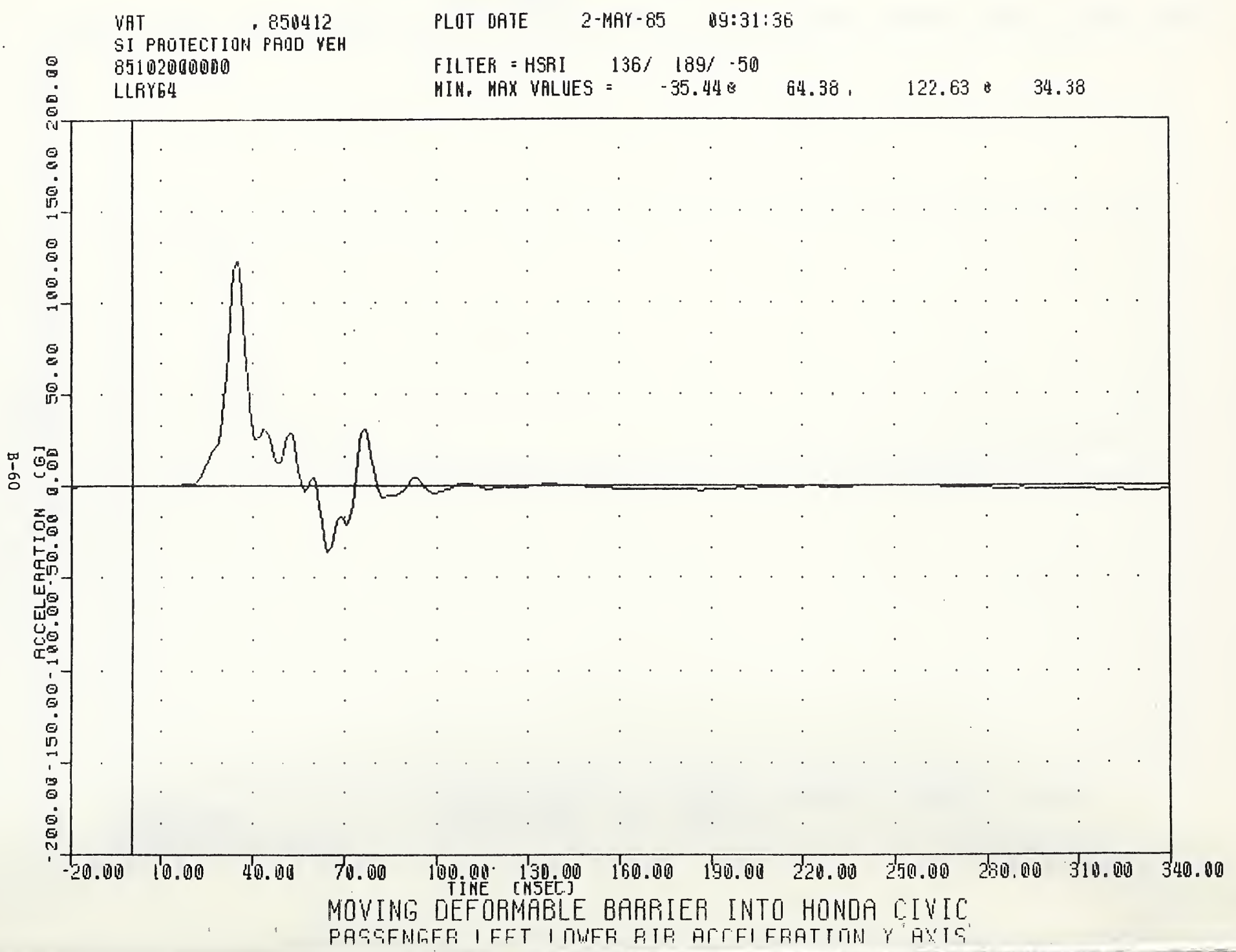

VRT , 850412
SI PROTECTION PROD VEH
85102000000
LURYV4
PLOT DATE 26-JUN-85 10:40:03
FILTER = HSRI 136/ 169/ -50
MIN, MAX VALUES = -0.03@ 1.25 , 26.34 @ 81.25
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
VELOCITY (MPH)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING LURY64



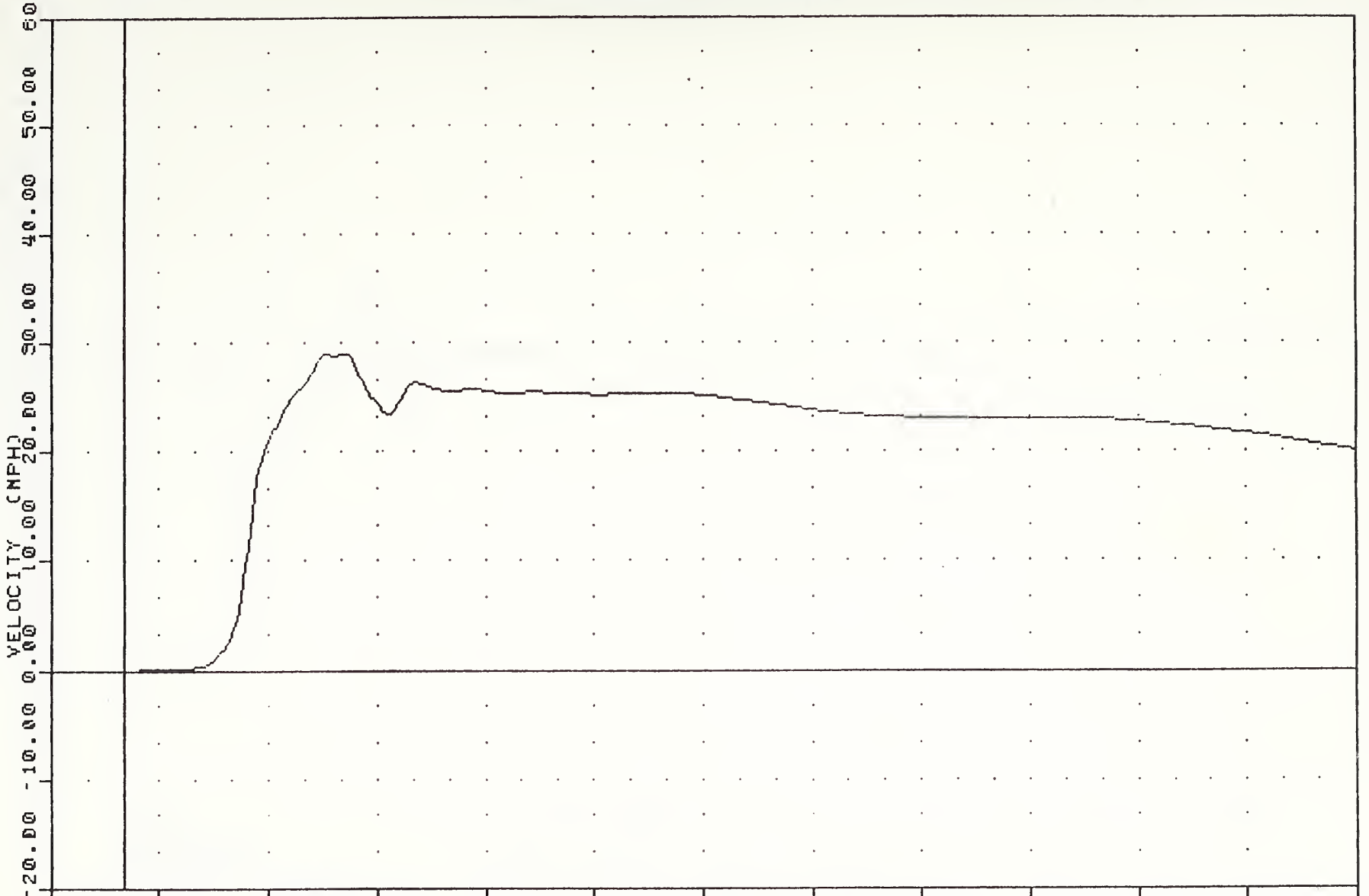
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

PASSENGER LEFT UPPER RIB ACCELERATION -2 'Y AXIS


VRT , 850412
SI PROTECTION PROD VEH
85102000000
LURYVD
PLOT DATE 2-MAY-85 09:53:06
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -0.09 @ -17.50 , 28.29 @ 142.50
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
VELOCITY (MPH)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING LURYGD

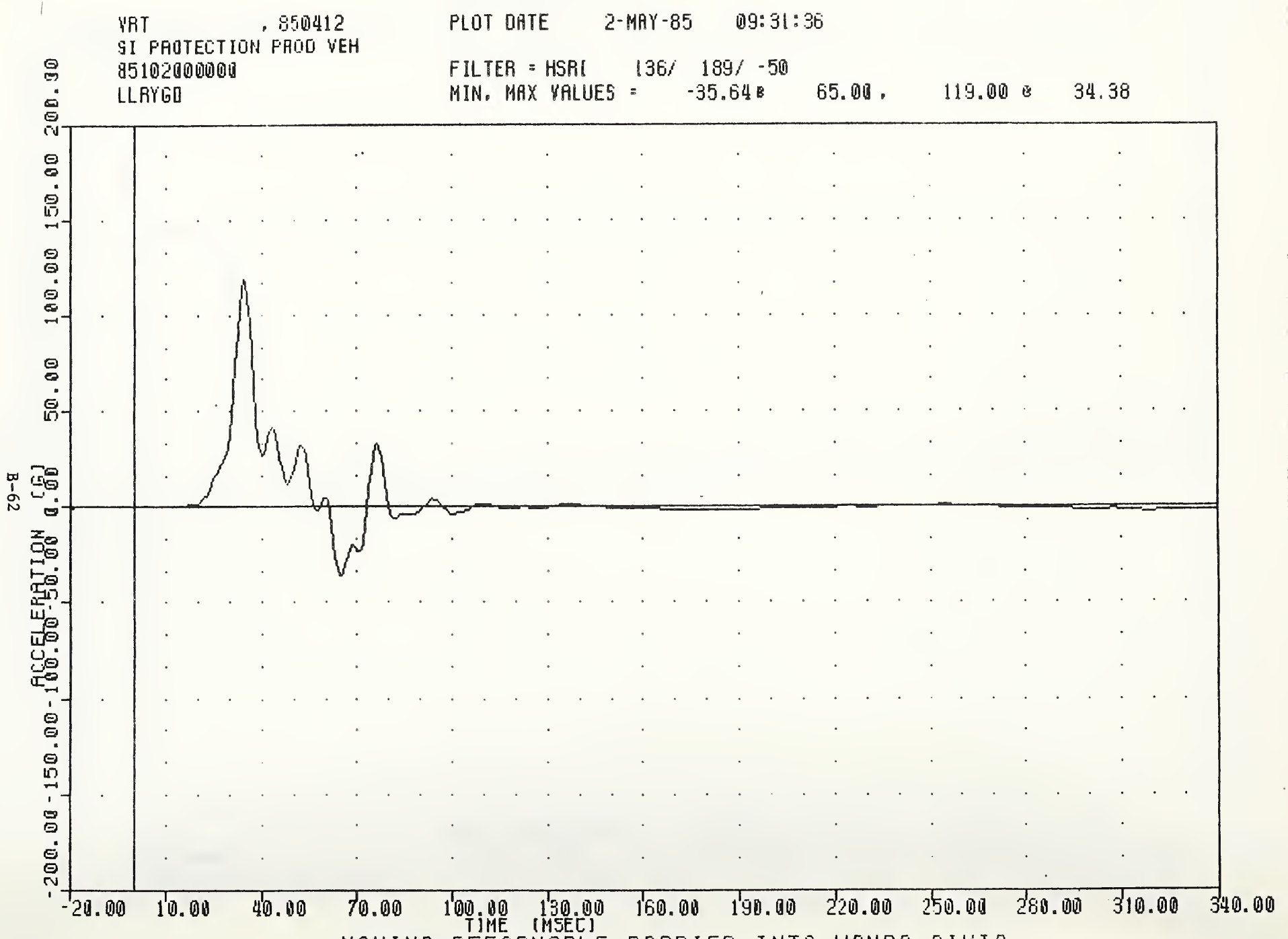

VAT , 850412
SI PROTECTION PROD VEH
851020Q0000
LLRY64
PLOT DATE 2-MAY-85 09:31:36
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -35.44 @ 64.38 , 122.63 @ 34.38
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
ACCELERATION (G)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER LEFT LOWER RIB ACCELERATION Y AXIS

VAT , 850412 PLOT DATE 2-MAY-85 09:53:06
SI PROTECTION PROD VEH
85102000000 FILTER = HSRI 136/ 189/ -50
LLRYV4 MIN, MAX VALUES = -0.04 @ -16.25 , 29.01 @ 60.62

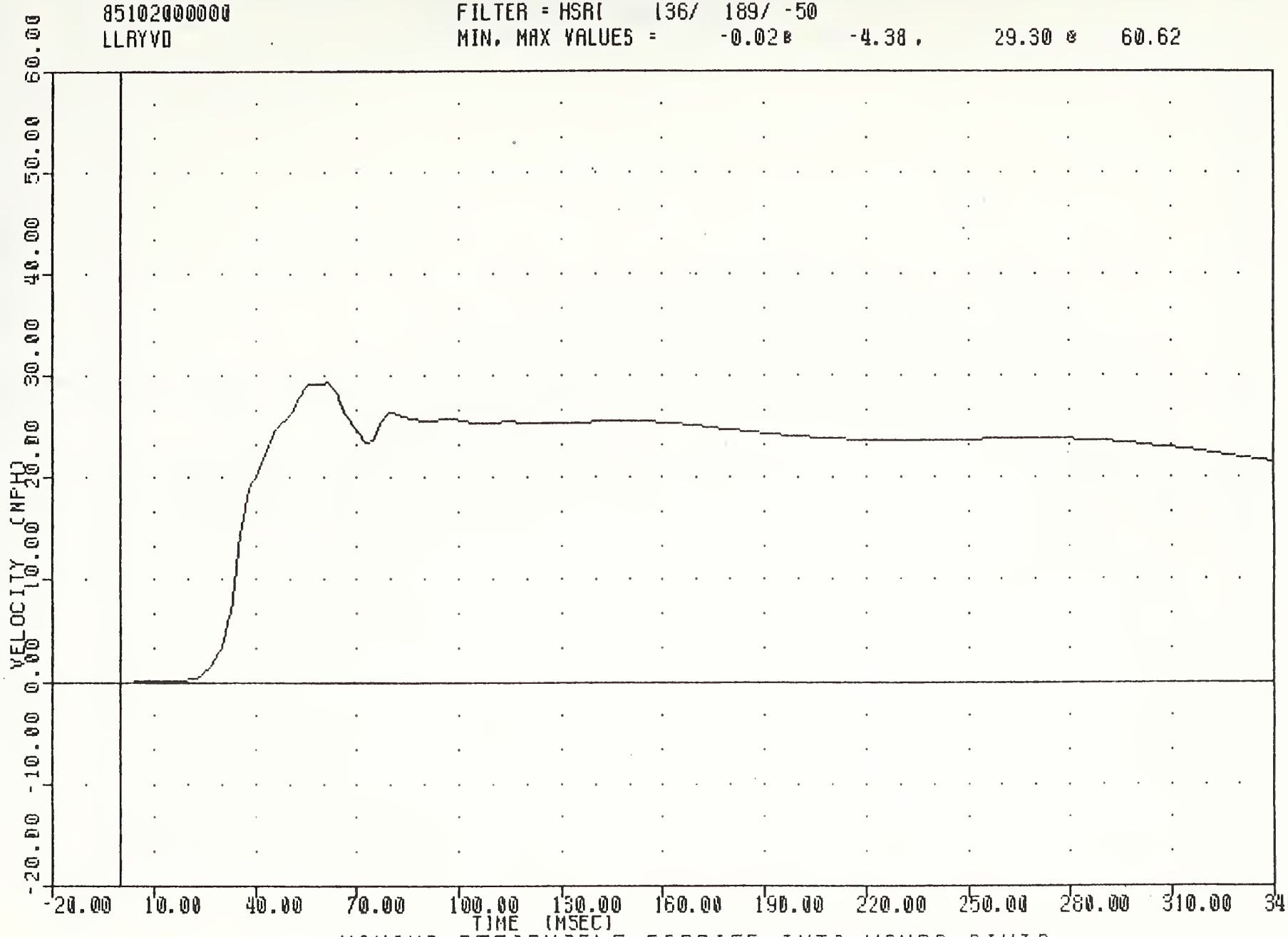


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

DELTA V USING LLRYV4

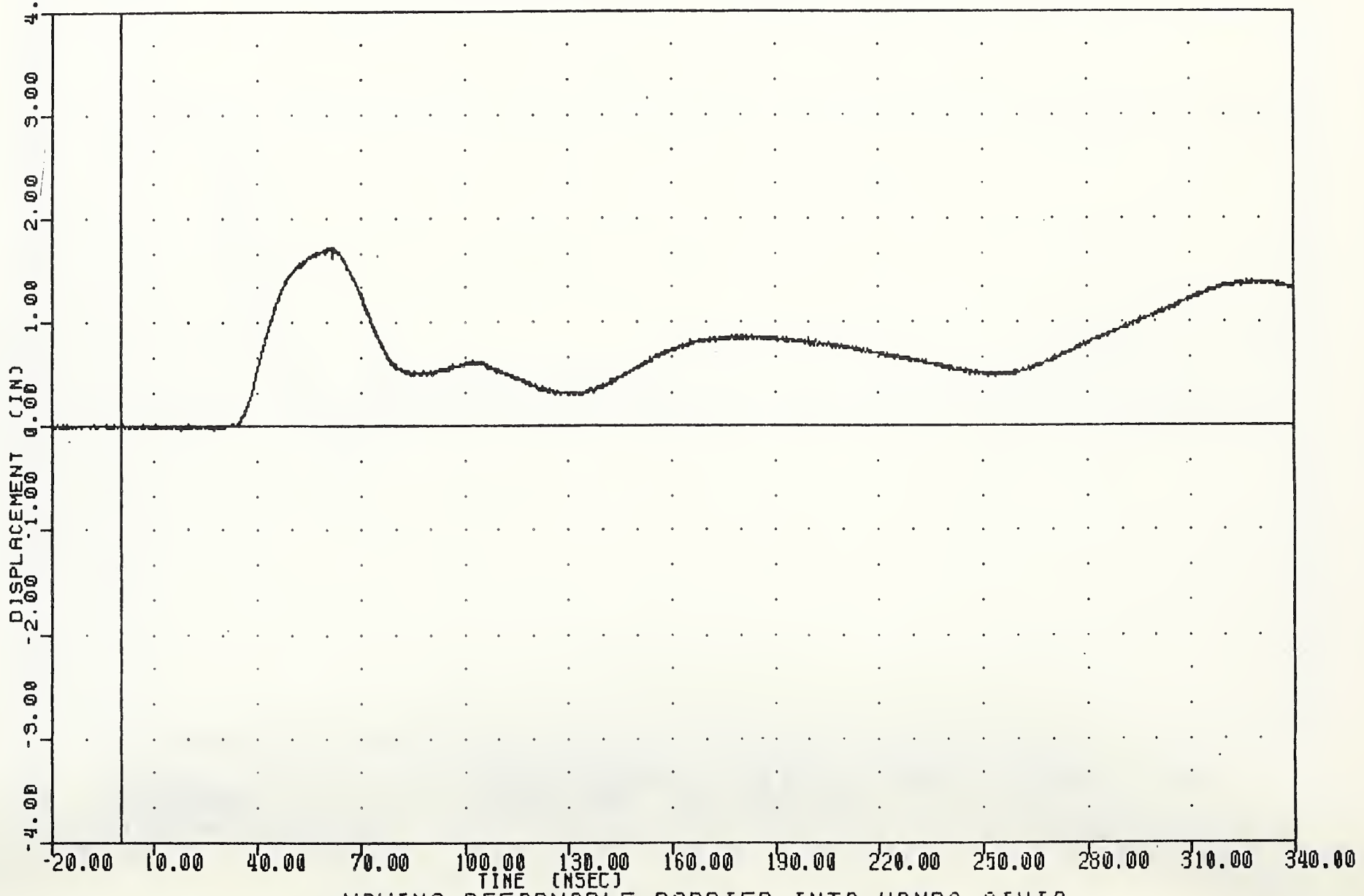

VRT , 850412
SI PROTECTION PROD VEH
85102000000
LLRYGD
PLOT DATE 2-MAY-85 09:31:36
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -35.64 @ 65.00 , 119.00 @ 34.38
ACCELERATION (G)
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER LEFT LOWER RIB ACCELERATION -2 Y AXIS

VRT , 850412 PLOT DATE 2-MAY-85 09:53:06
SI PROTECTION PROD VEH
85102000000 FILTER = HSRI 136/ 189/ -50
LLRYVD MIN, MAX VALUES = -0.02 @ -4.38 , 29.30 @ 60.62

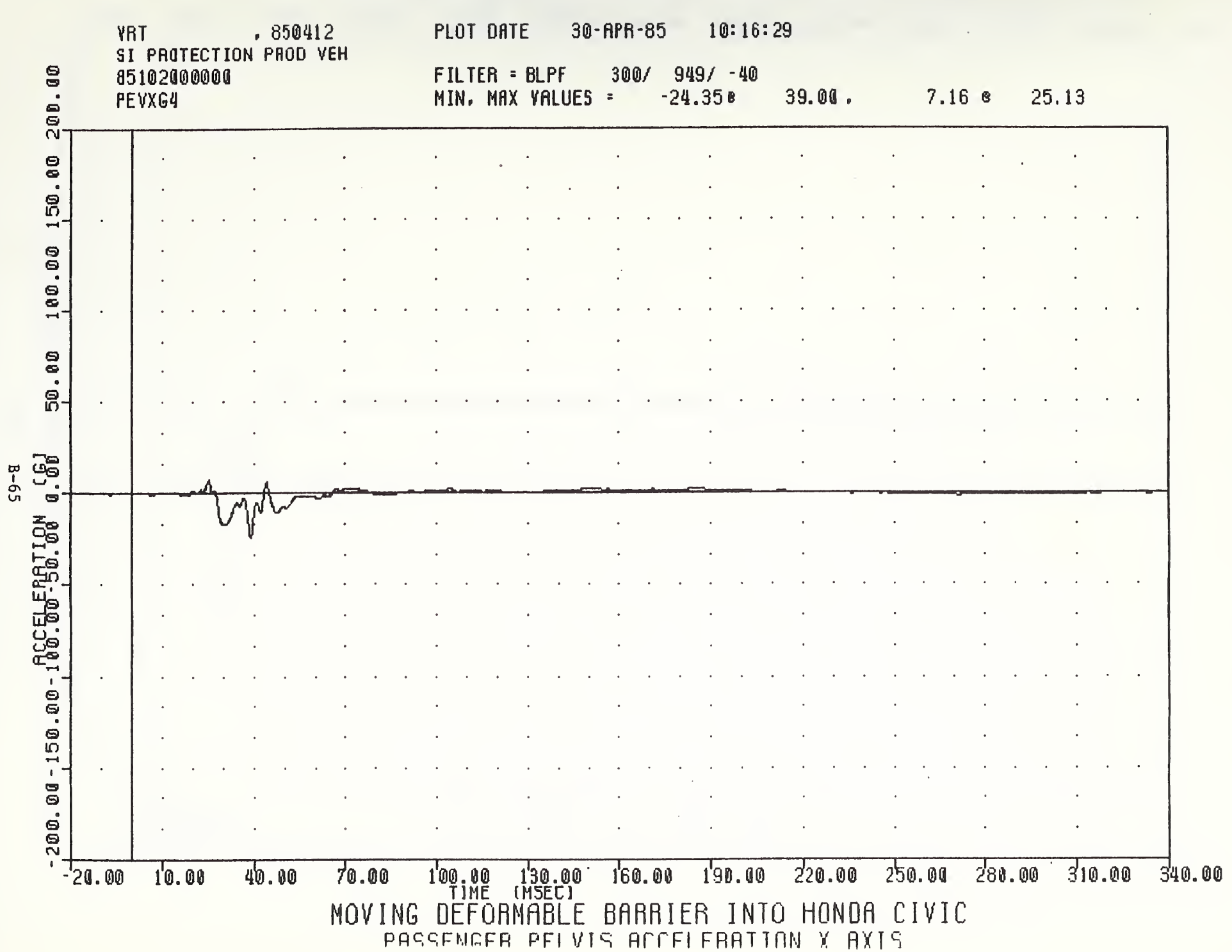


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING LLRYGD

VAT , 850412 PLOT DATE 30-APR-85 10:16:29
SI PROTECTION PROD VEH
8510200000D FILTER = ALPF 1650/ 5217/ -40
LATYD4 MIN, MAX VALUES = -0.03 @ 27.38 , 1.73 @ 60.38



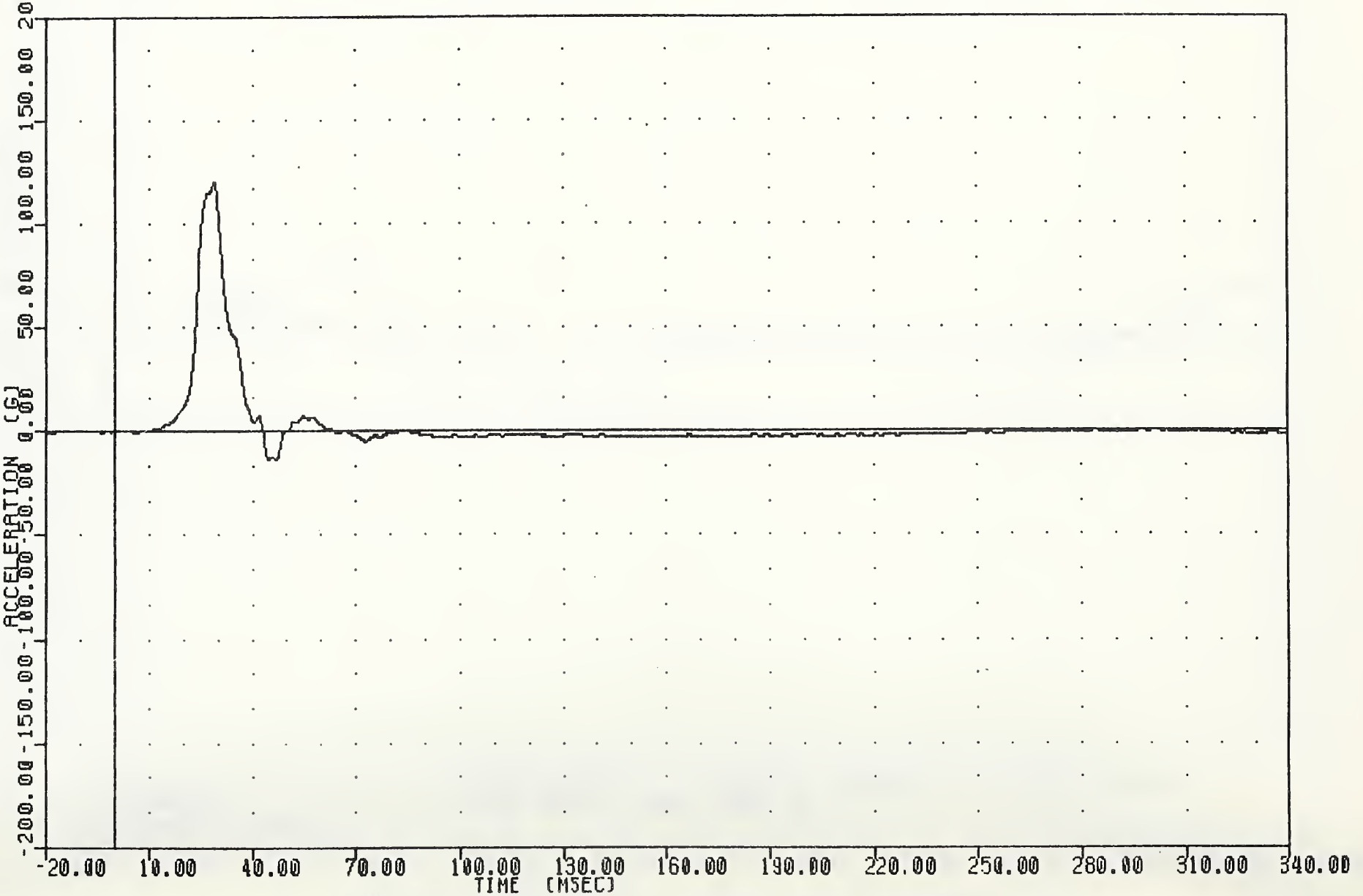
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER LEFT RIB TO SPINE DISPLACEMENT INCHES


VRT , 850412
SI PROTECTION PROD VEH
85102000000
PEVXG4
PLOT DATE 30-APR-85 10:16:29
FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -24.35 @ 39.00 , 7.16 @ 25.13
ACCELERATION (G)
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER PELVIS ACCELERATION X AXIS

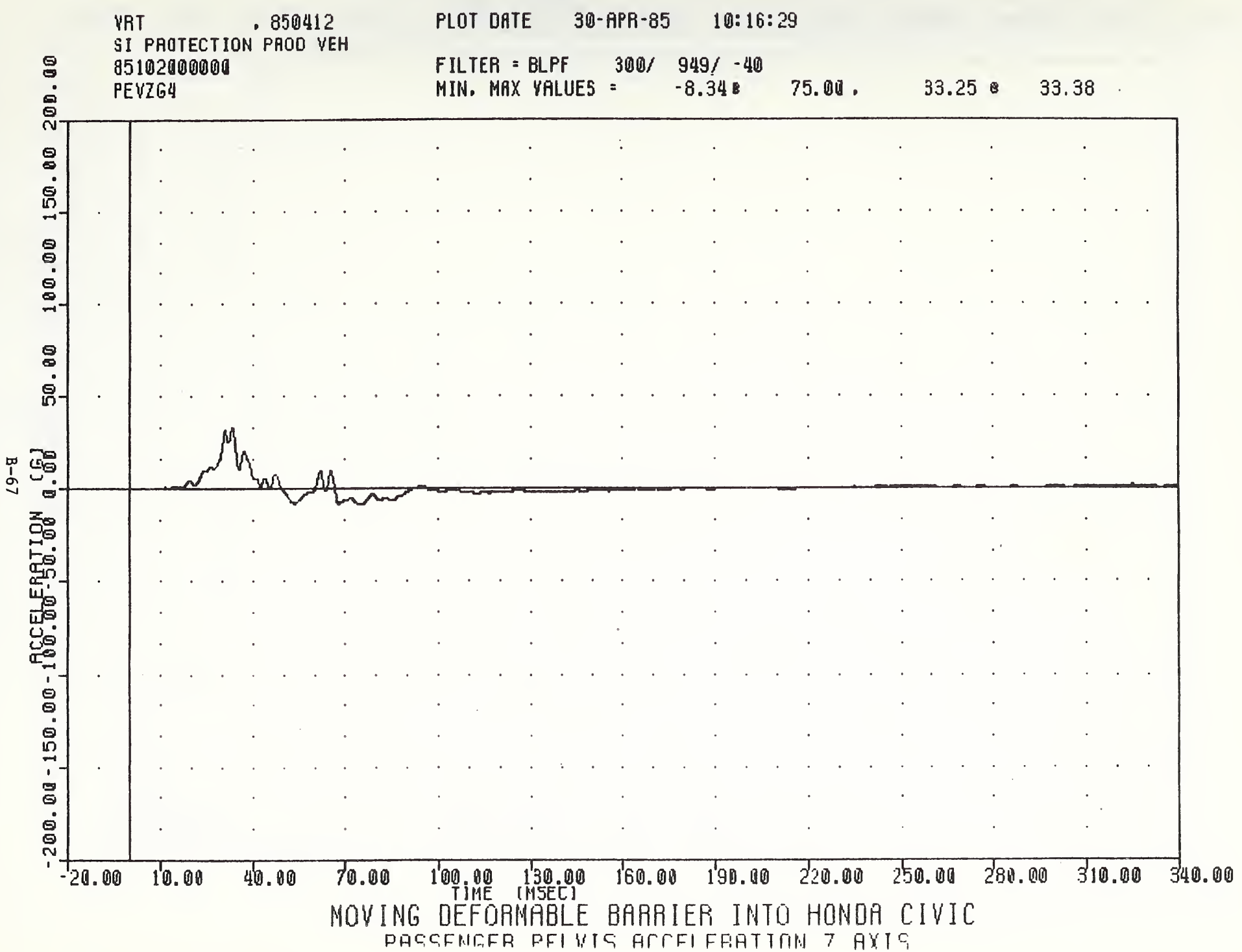
VRT , 850412
SI PROTECTION PROD VEH
85102000000
PEVYG4

PLOT DATE 30-APR-85 10:16:29

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -13.77 @ 46.88 , 119.88 @ 28.75

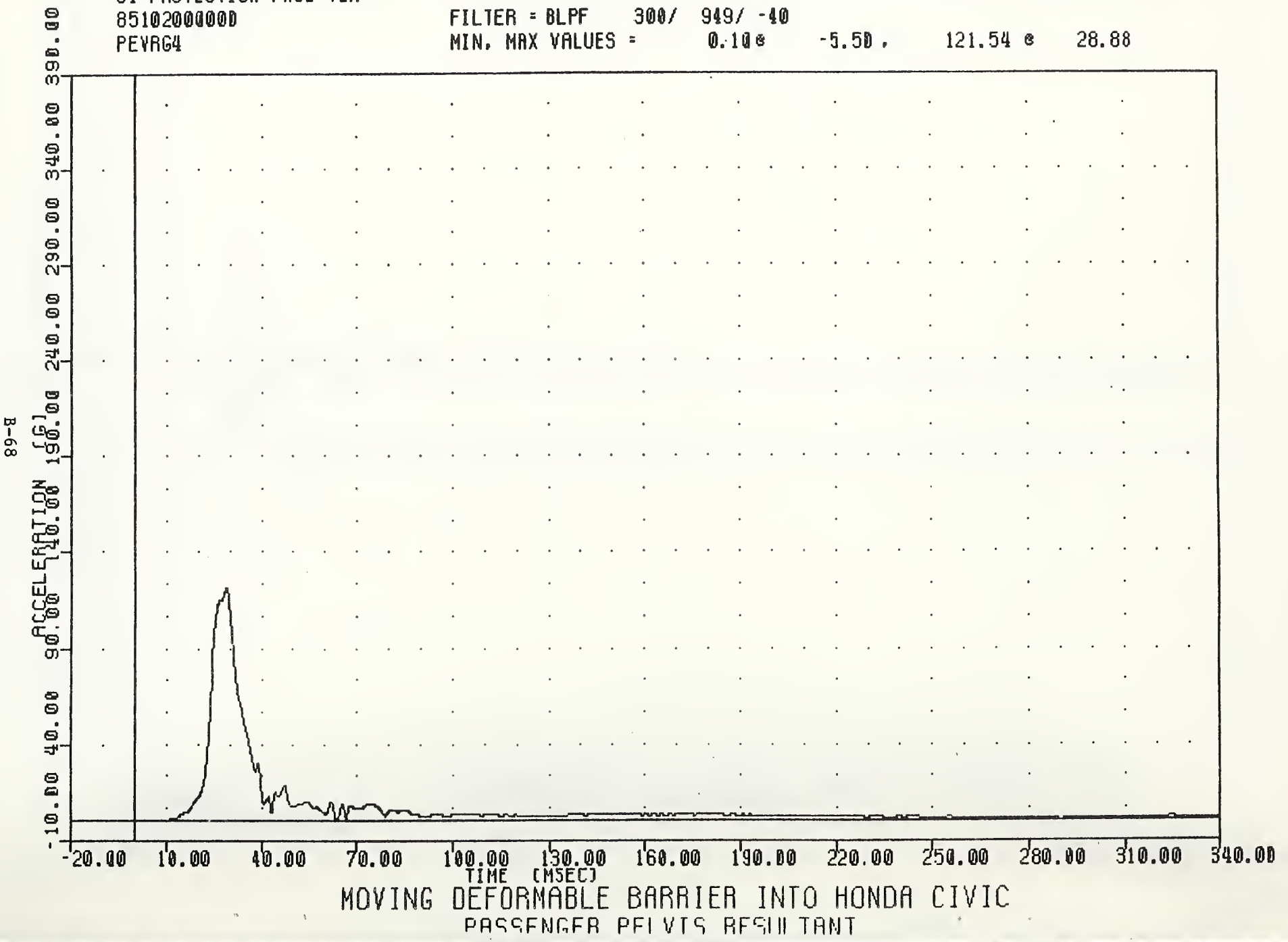


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER PELVIS ACCELERATION Y AXIS

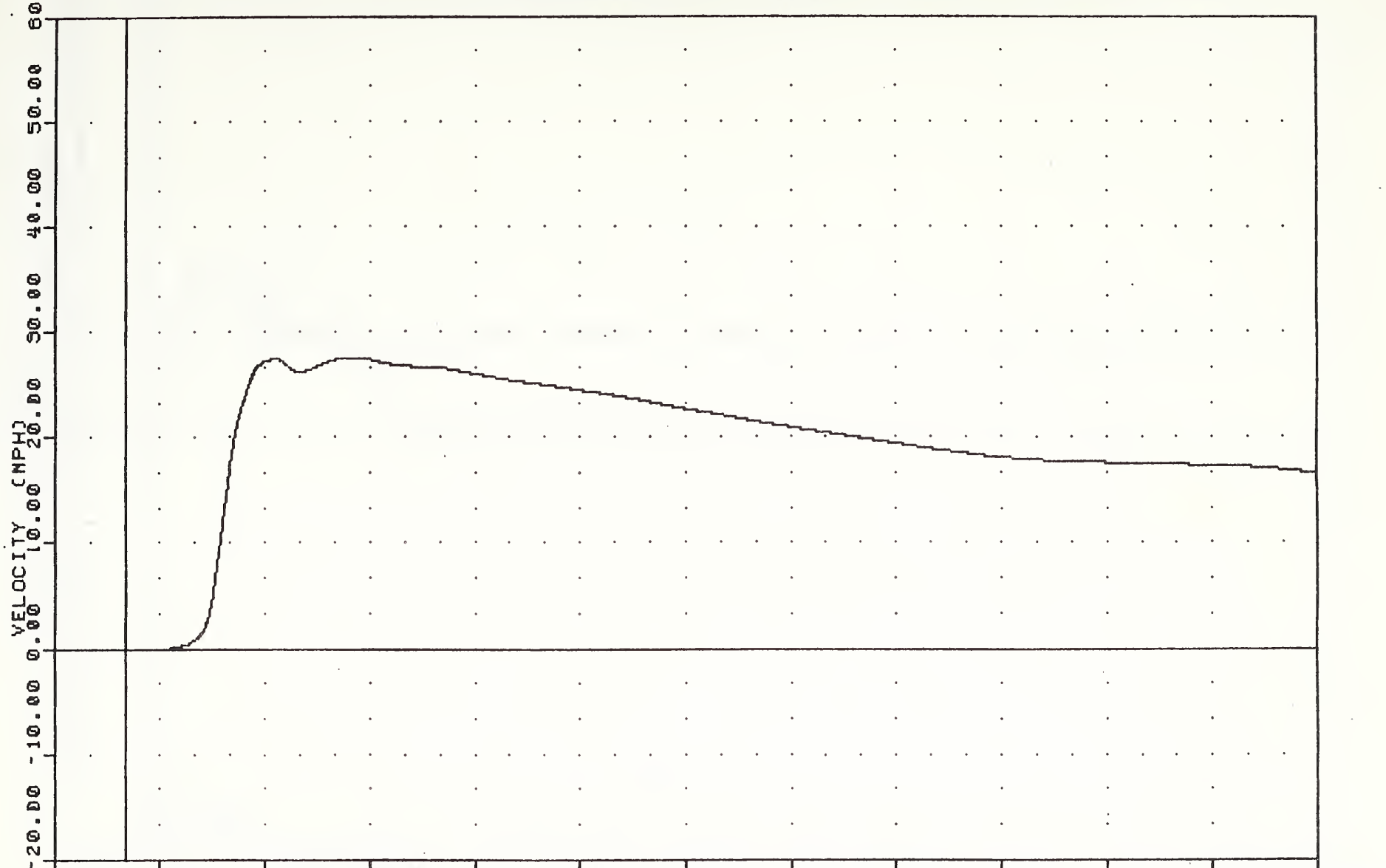


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

PASSENGER PELVIS ACCELERATION Y AXIS


VRT , 850412
SI PROTECTION PROD VEH
8510200@@@D
PEVRG4
PLOT DATE 30-APR-85 10:16:29
FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = 0.10@ -5.50 , 121.54 @ 28.88
ACCELERATION (G)
-10.00 40.00 90.00 140.00 190.00 240.00 290.00 340.00 390.00
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
PASSENGER PELVIS RESULTANT

VAT , 850412 PLOT DATE 30-APR-85 10:16:29
SI PROTECTION PROD VEH
85102000000 FILTER = BLPF 300/ 949/ -40
PEVYY4 MIN, MAX VALUES = -0.05 @ 7.38 , 27.57 @ 43.13



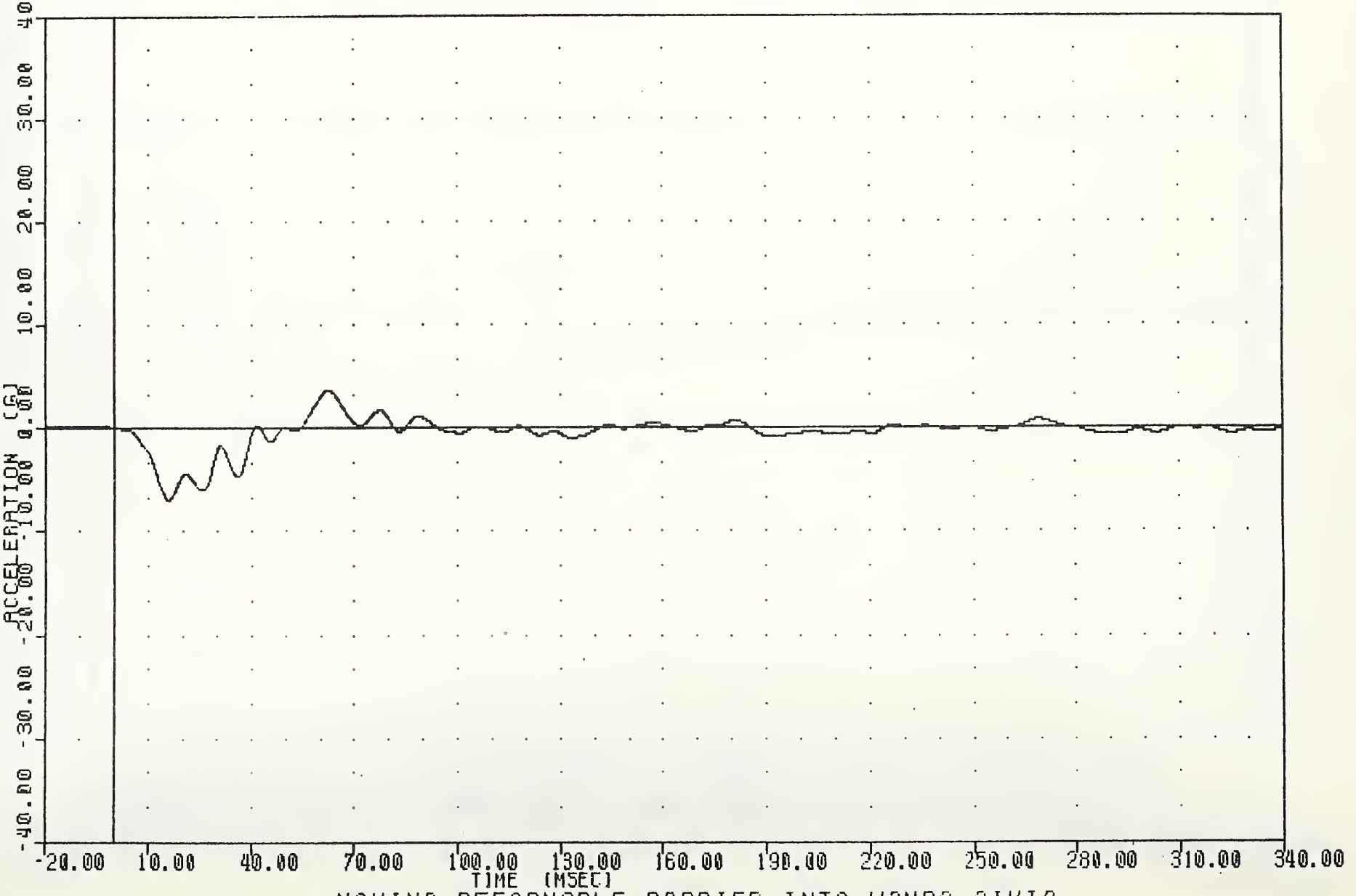
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

DELTA V USING PEVYY4

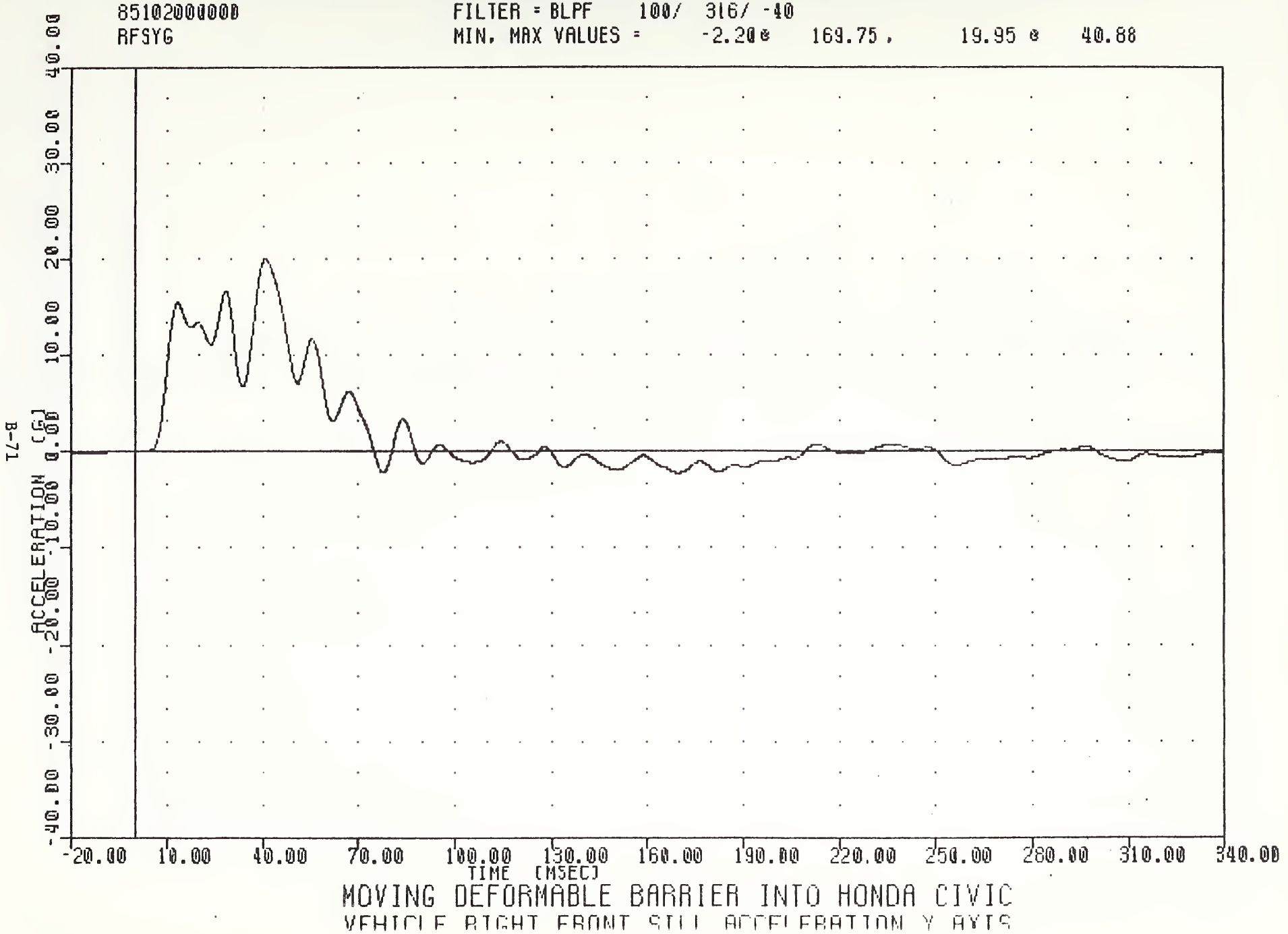
VRT , 850412
SI PROTECTION PROD VEH
85102000000
AFSXG

PLOT DATE 2-MAY-85 09:22:40

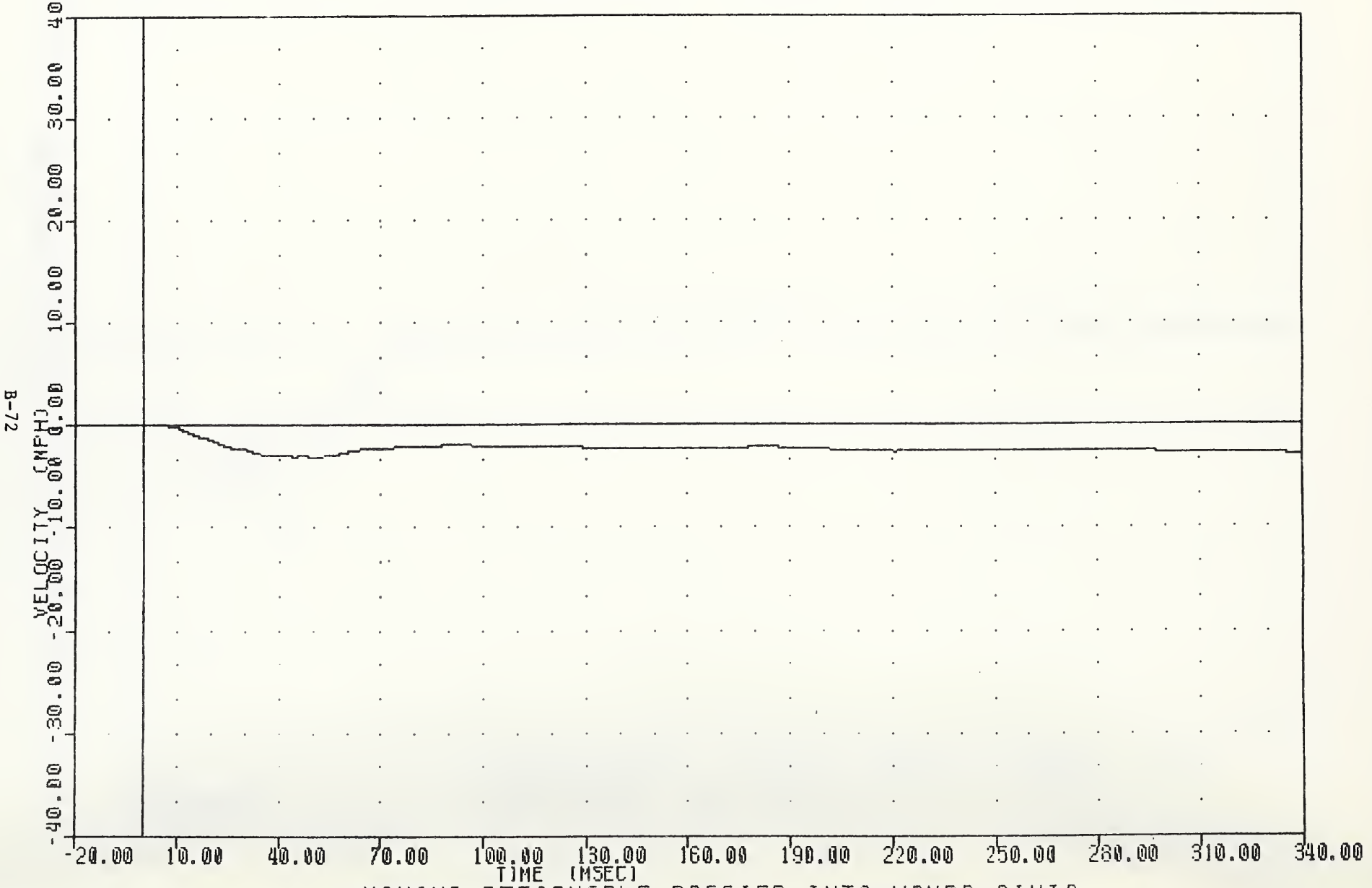
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -6.89 @ 15.88 , 3.70 @ 62.38



MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
VEHICLE RIGHT FRONT STIL ACCELERATION X AXIS

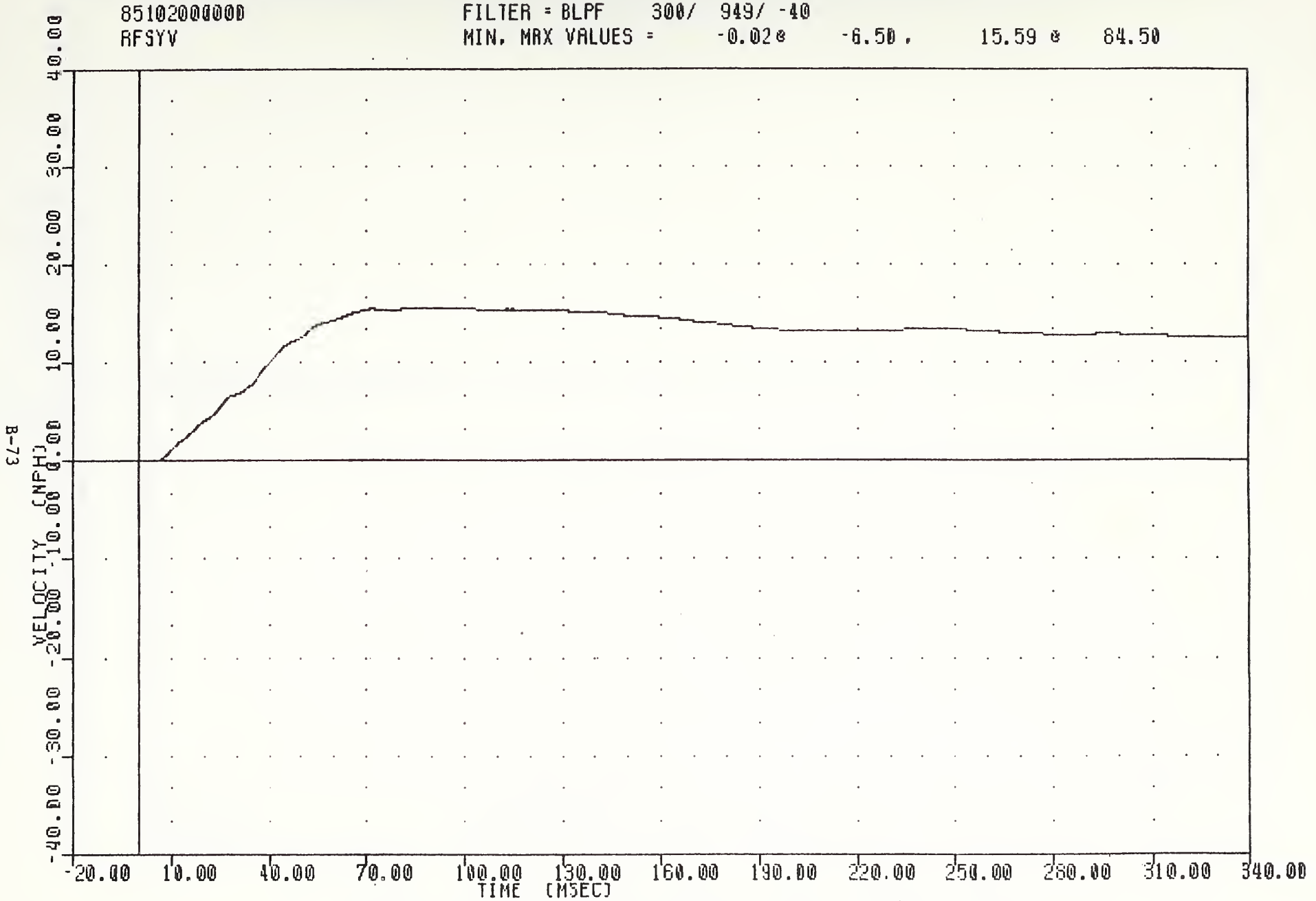

VRT , 850412
SI PROTECTION PROD VEH
85102000000
RFSYG
PLOT DATE 2-MAY-85 09:22:40
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -2.20 @ 169.75 , 19.95 @ 40.88
ACCELERATION (G)
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-40.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
VEHICLE RIGHT FRONT STIL ACCELERATION Y AXIS

VRT , 850412 PLOT DATE 2-MAY-85 14:16:19
SI PROTECTION PROD VEH
85102000000 FILTER = BLPF 300/ 949/ -40
RFSXV MIN. MAX VALUES = -3.05@ 51.38 , 0.11 @ -3.50



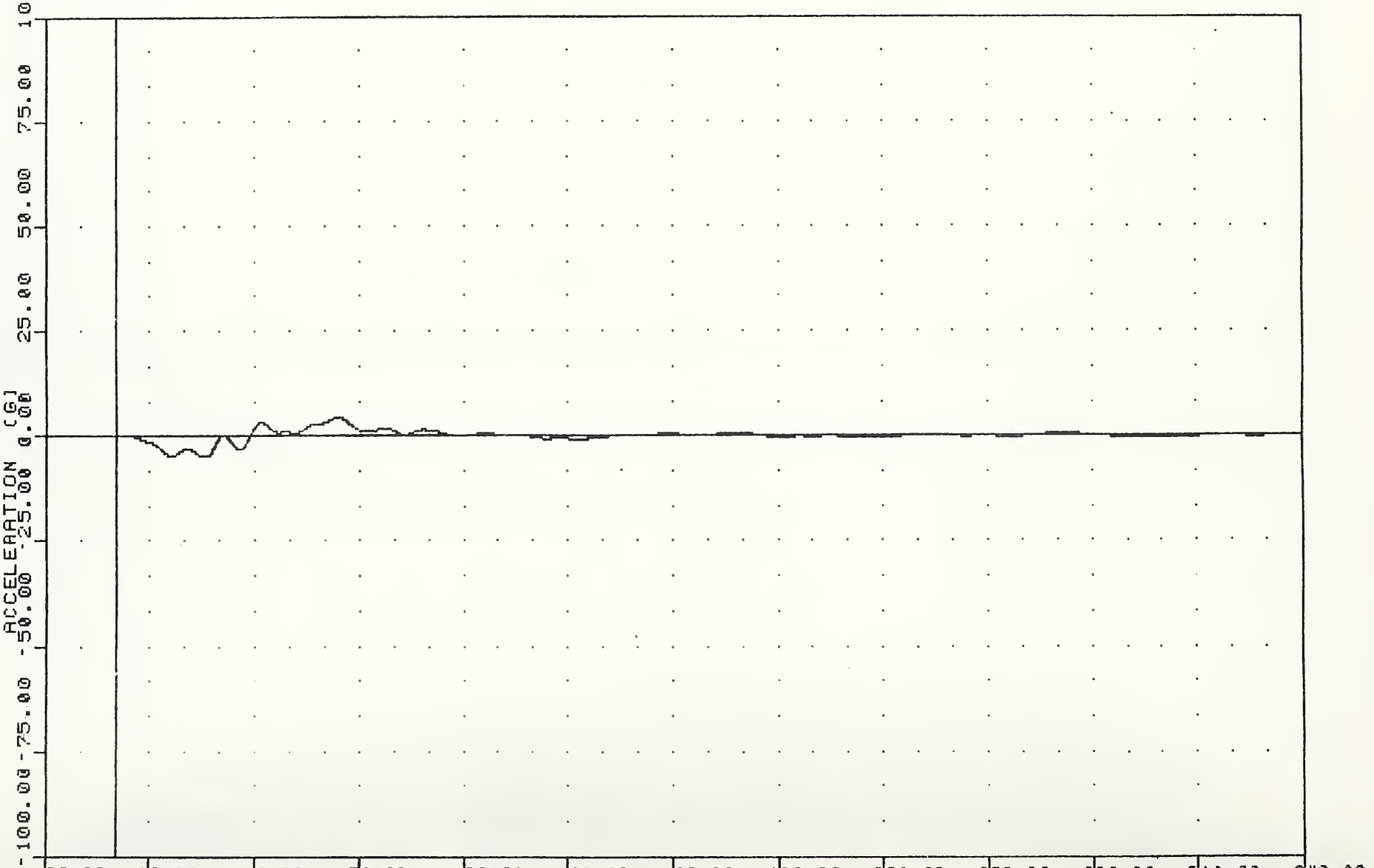
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING RFSXG

VRT , 850412 PLOT DATE 2-MAY-85 14:16:19
SI PROTECTION PROD VEH
85102000000 FILTER = BLPF 300/ 949/ -40
RFSYV MIN, MAX VALUES = -0.02 @ -6.50 , 15.59 @ 84.50

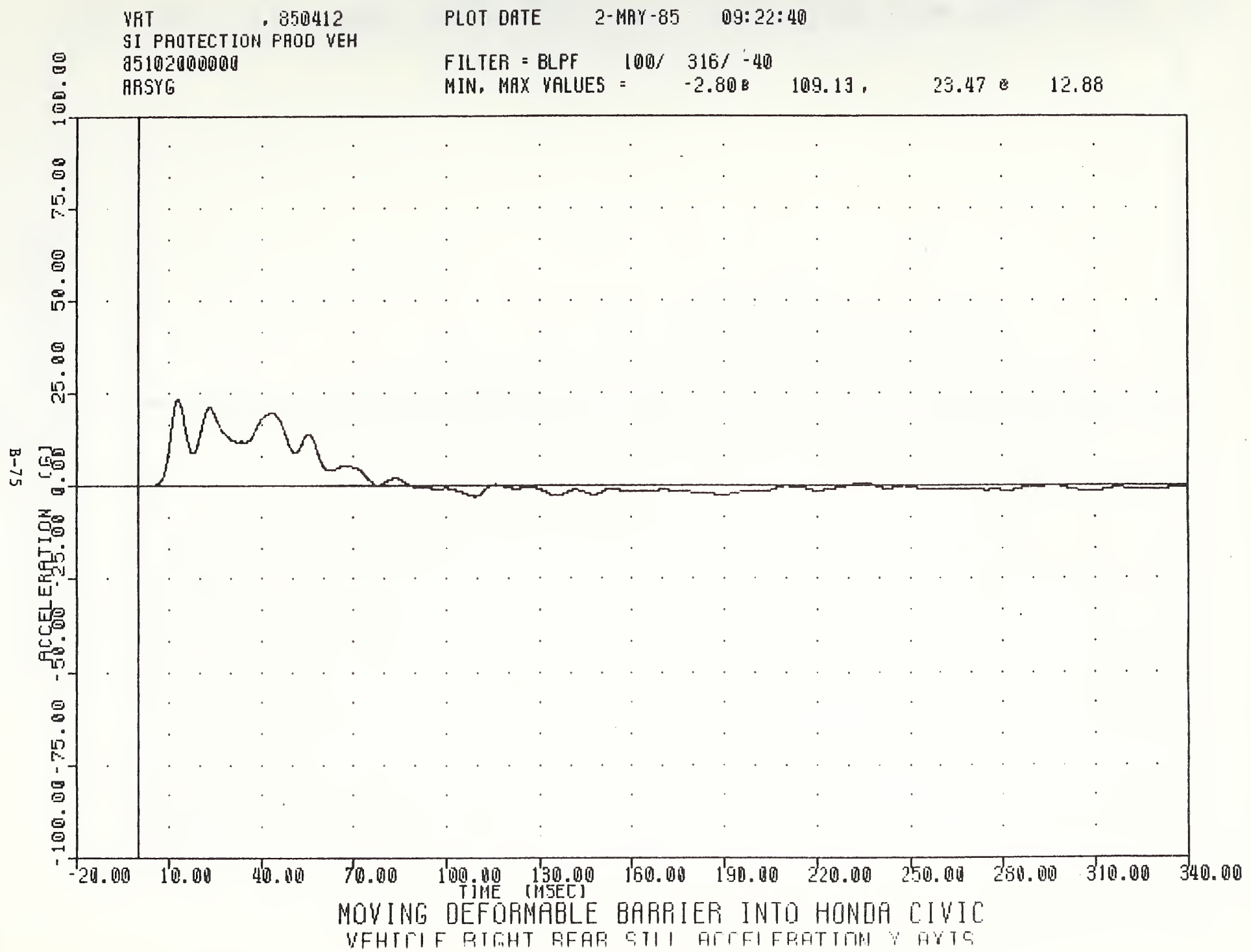


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING RFSYG

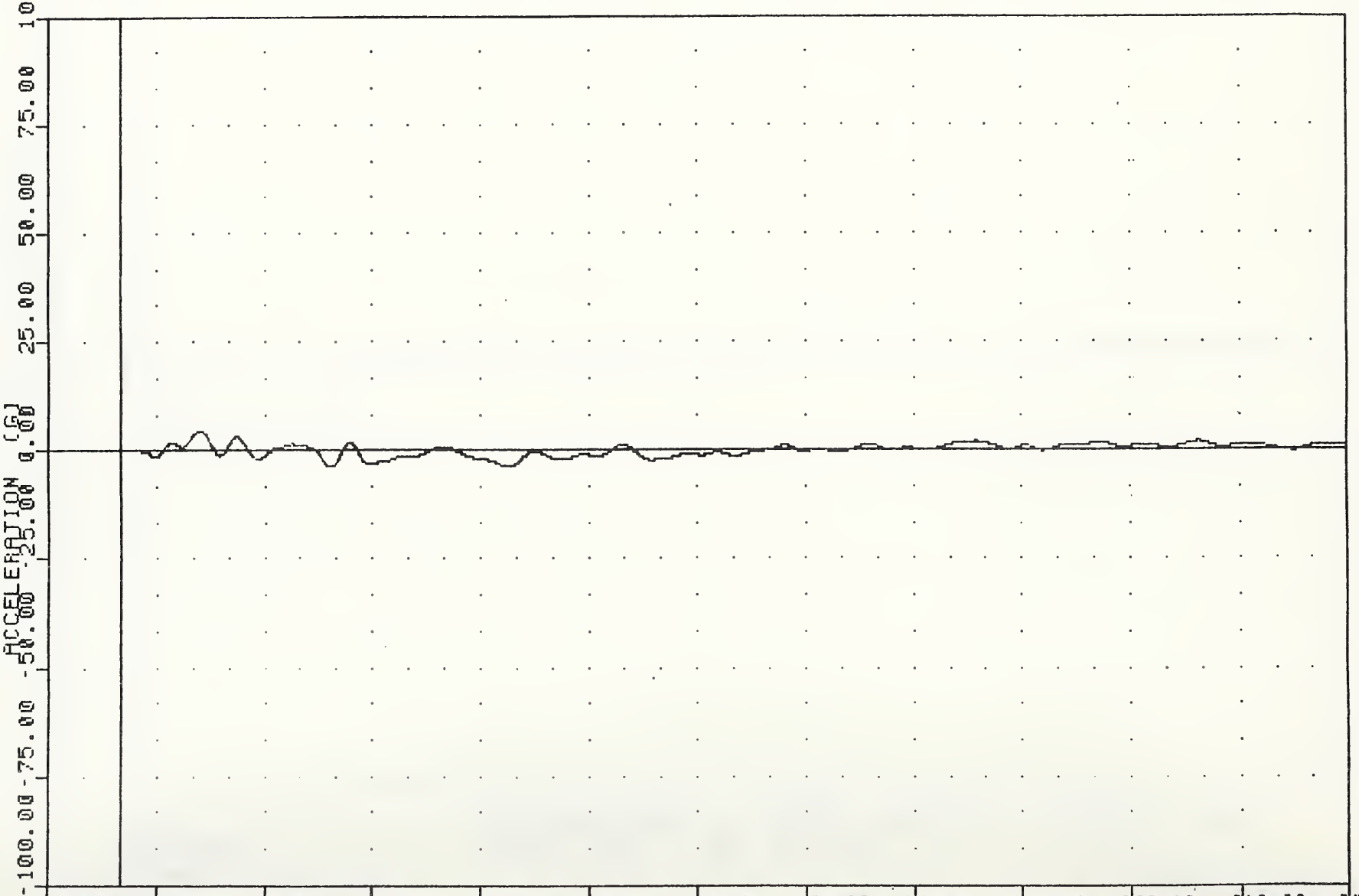
VAT , 850412 PLOT DATE 2-MAY-85 09:22:40
SI PROTECTION PROD VEH
85102000000 FILTER = BLPF 100/ 316/ -40
RASX6 MIN. MAX VALUES = -4.83 @ 25.50 , 4.41 @ 64.00



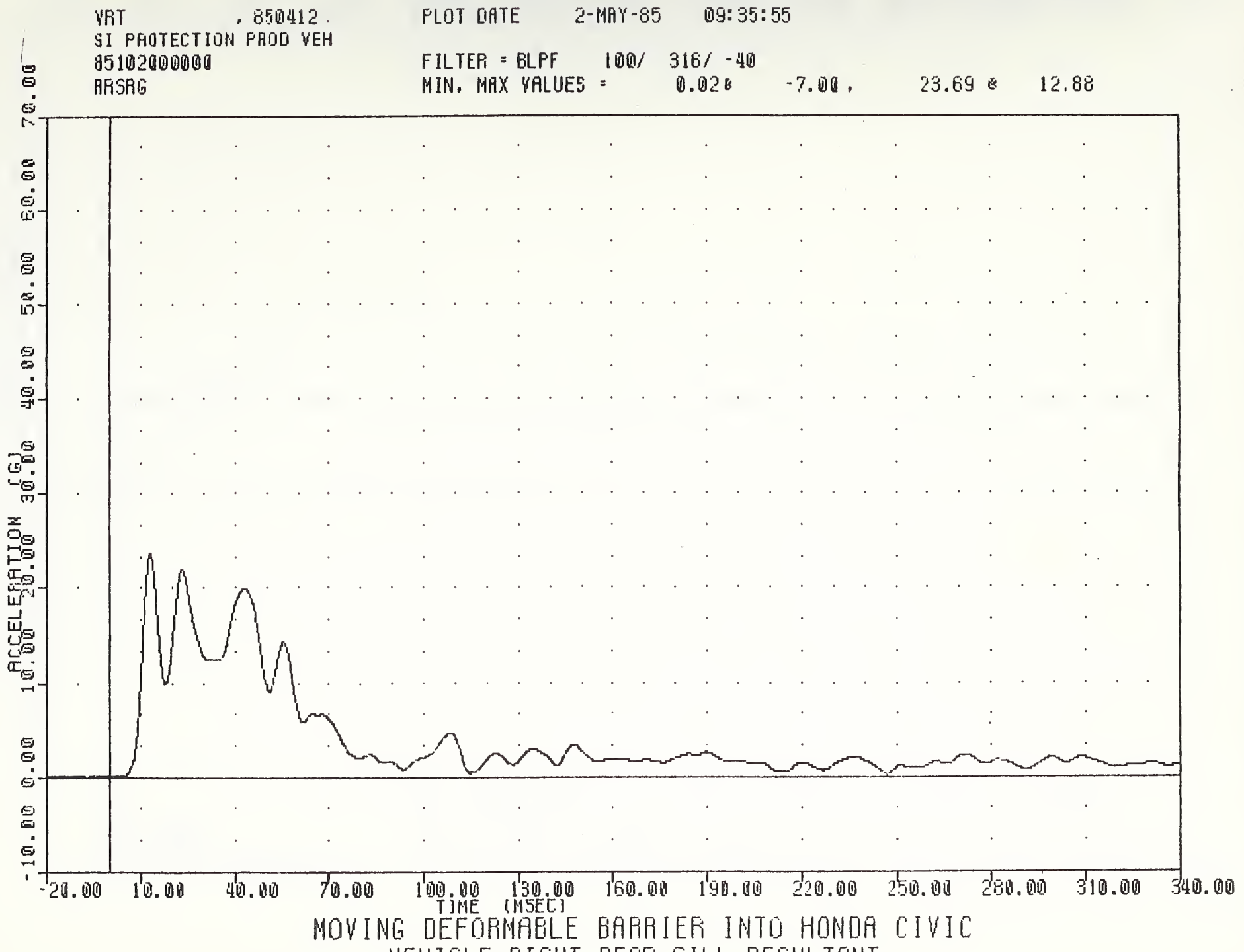
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
VEHICLE RIGHT REAR SILL ACCELERATION Y AXIS


VRT , 850412
PLOT DATE 2-MAY-85 09:22:40
SI PROTECTION PROD VEH
85102000000
FILTER = BLPF 100/ 316/ -40
ARSYG
MIN, MAX VALUES = -2.80 @ 109.13 , 23.47 @ 12.88
100.00
75.00
50.00
25.00
0.00
-25.00
-50.00
-75.00
-100.00
ACCELERATION [G]
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
VEHICLE RIGHT REAR SILL ACCELERATION Y AXIS

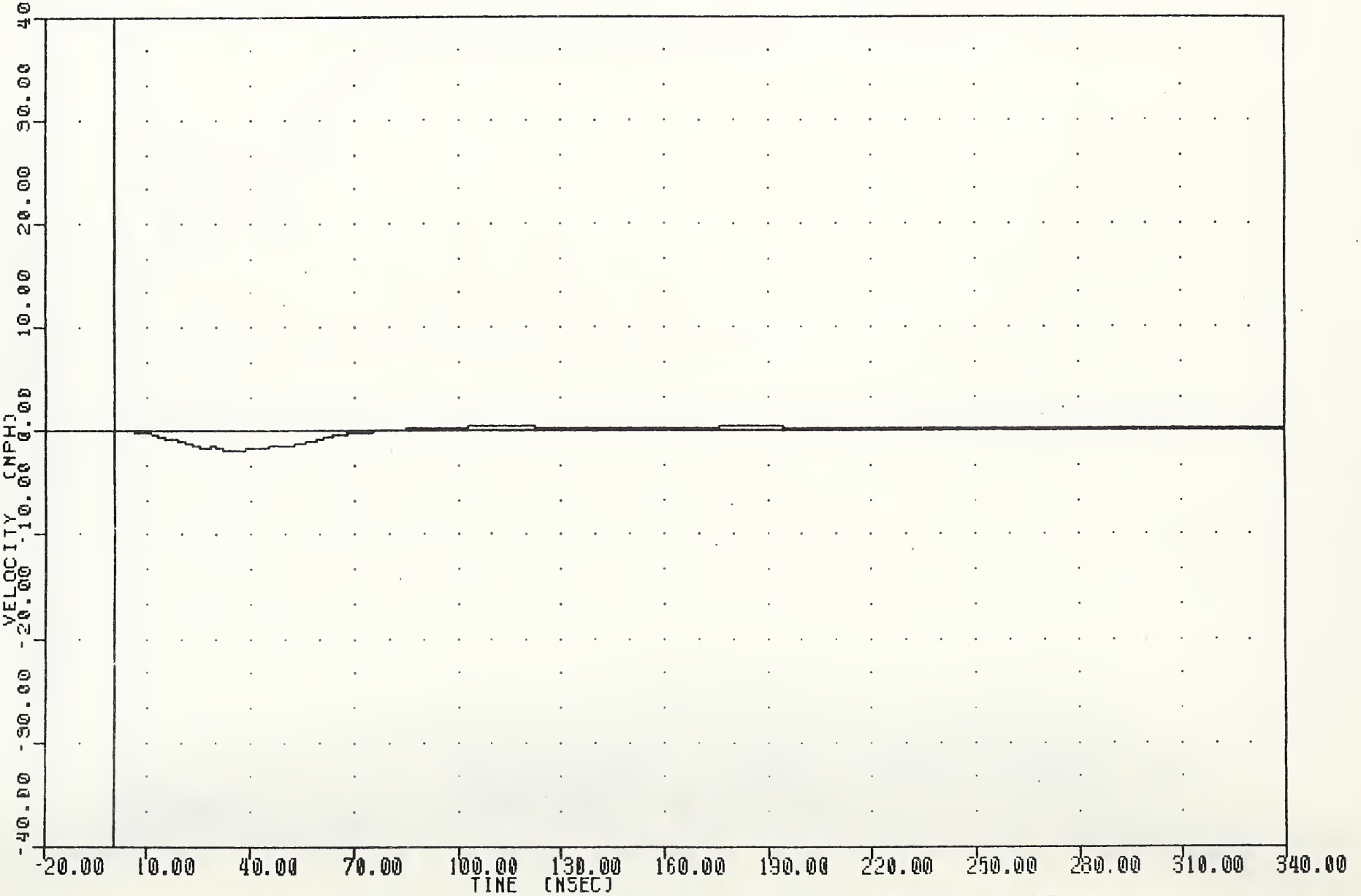
VRT , 850412 PLOT DATE 2-MAY-85 09:22:40
SI PROTECTION PROD VEH
8510200000 FILTER = BLPF 100/ 316/ -40
RRSZG MIN, MAX VALUES = -3.83@ 58.38 , 4.57 @ 22.00



MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
VEHICLE RIGHT REAR SILL ACCELERATION 7 AXIS

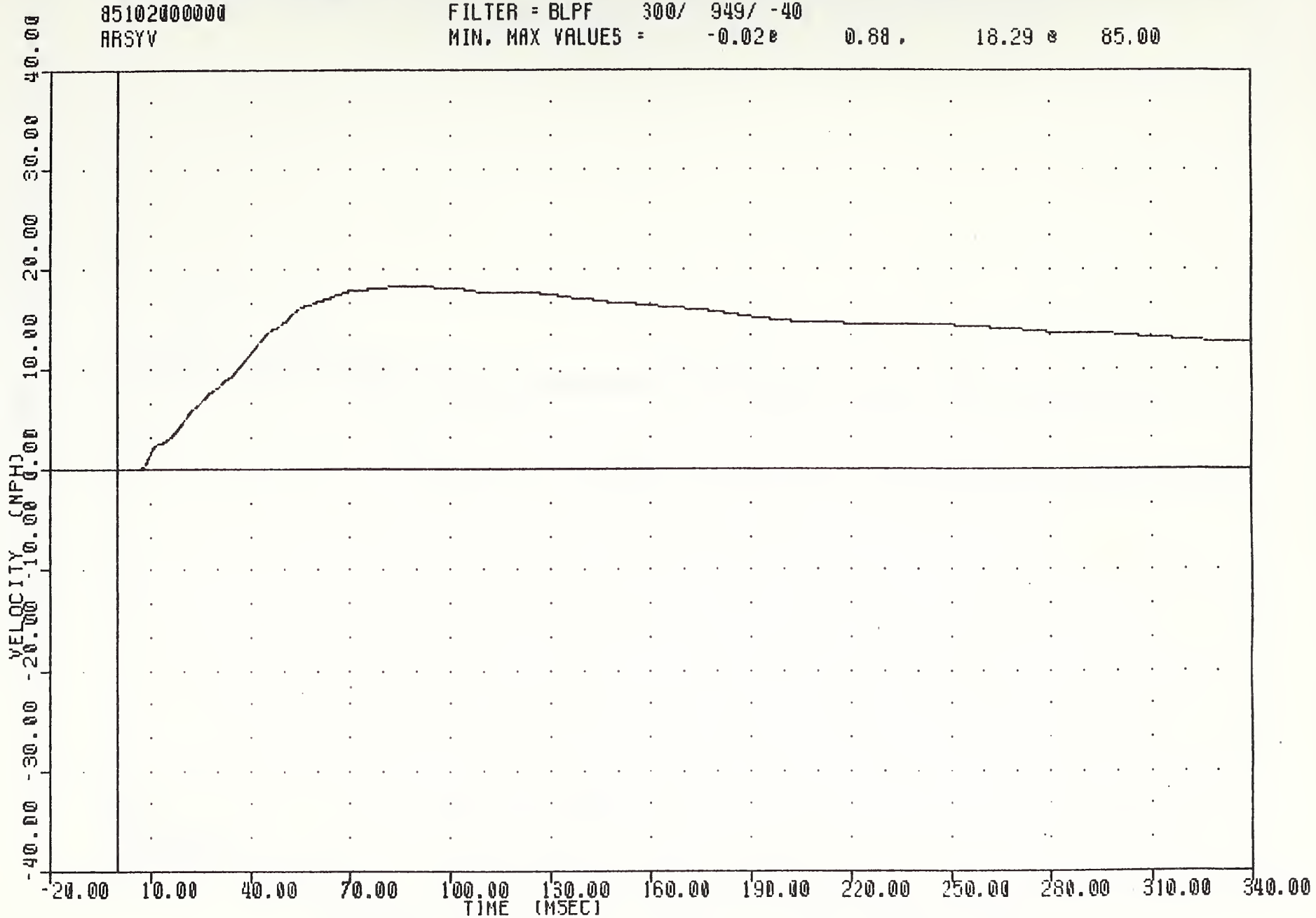

VRT , 850412.
SI PROTECTION PROD VEH
85102000000
RRSRG
PLOT DATE 2-MAY-85 09:35:55
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = 0.02 @ -7.00 , 23.69 @ 12.88
ACCELERATION (G)
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
VEHICLE RIGHT REAR SILL RESULTANT

VAT , 850412 PLOT DATE 2-MAY-85 14:16:19
SI PROTECTION PROD VEH
85102000000 FILTER = BLPF 300/ 949/ -40
RRSXV MIN, MAX VALUES = -1.92 @ 35.88 , 0.46 @ 116.00



MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

DELTA V USING RRSVC

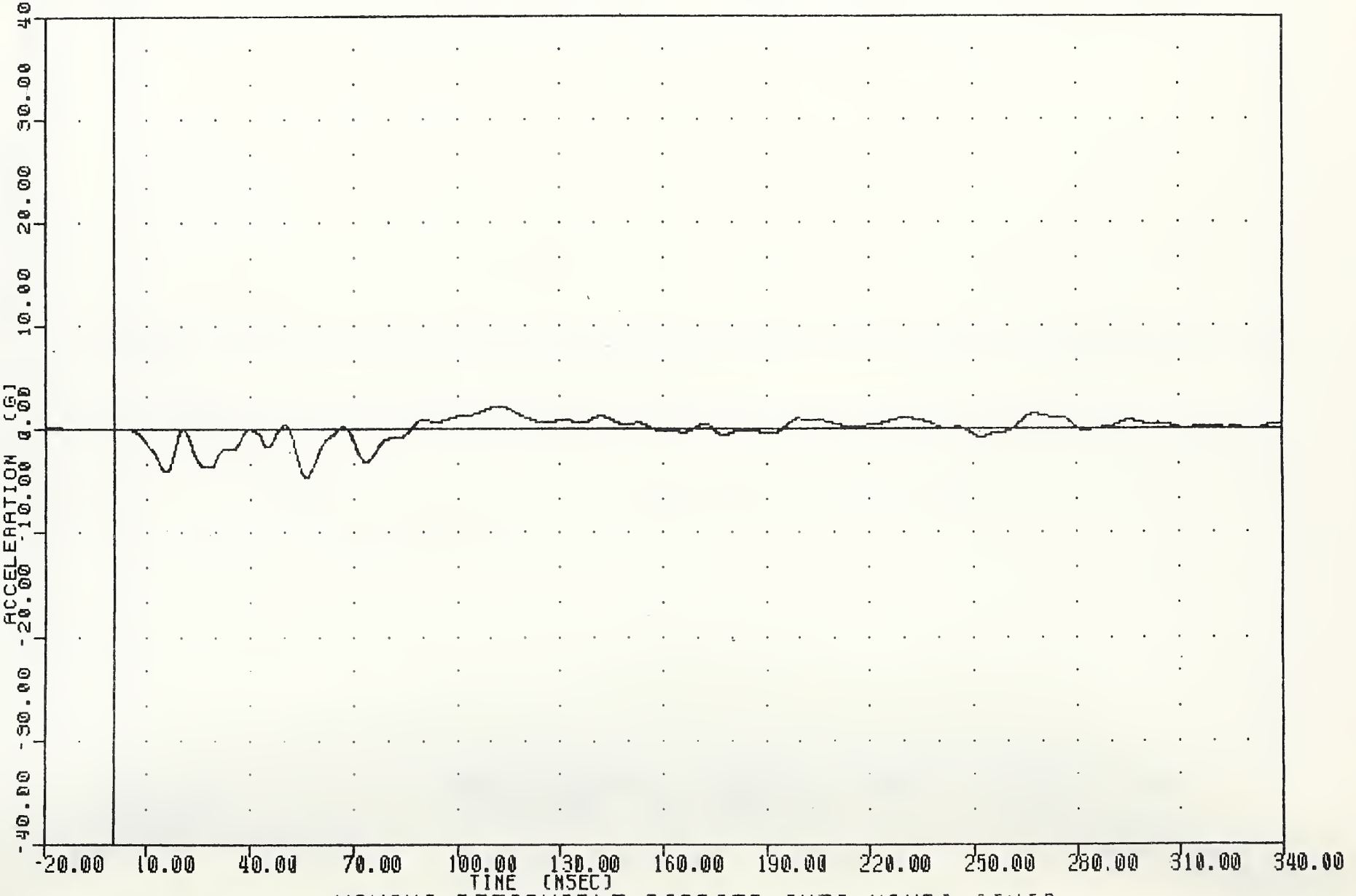


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING ARSYG

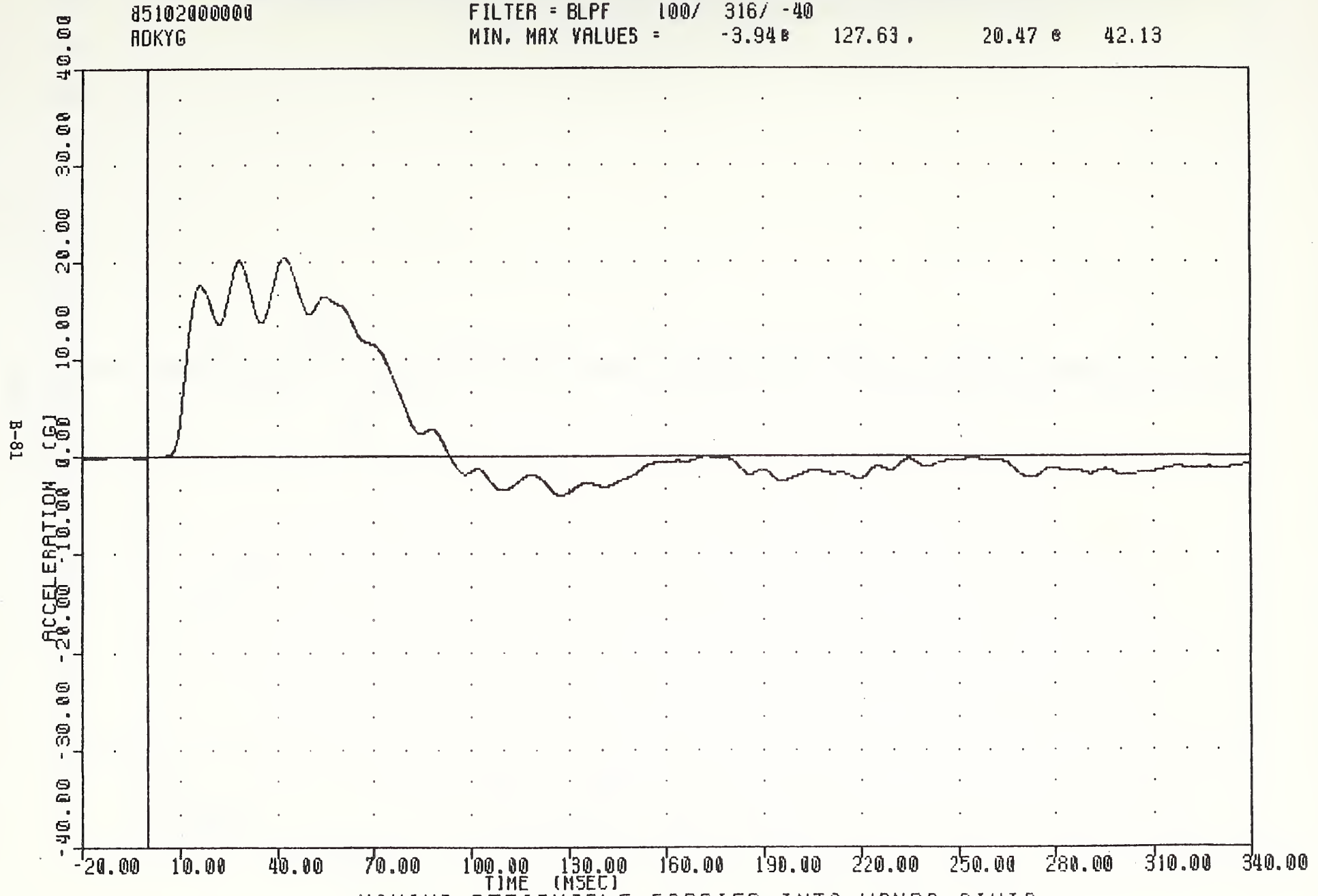
VAT , 850412
SI PROTECTION PROD VEH
85102000000
ROKX6

PLOT DATE 2-MAY-85 09:22:40

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -4.58 @ 56.25 , 2.26 @ 112.38

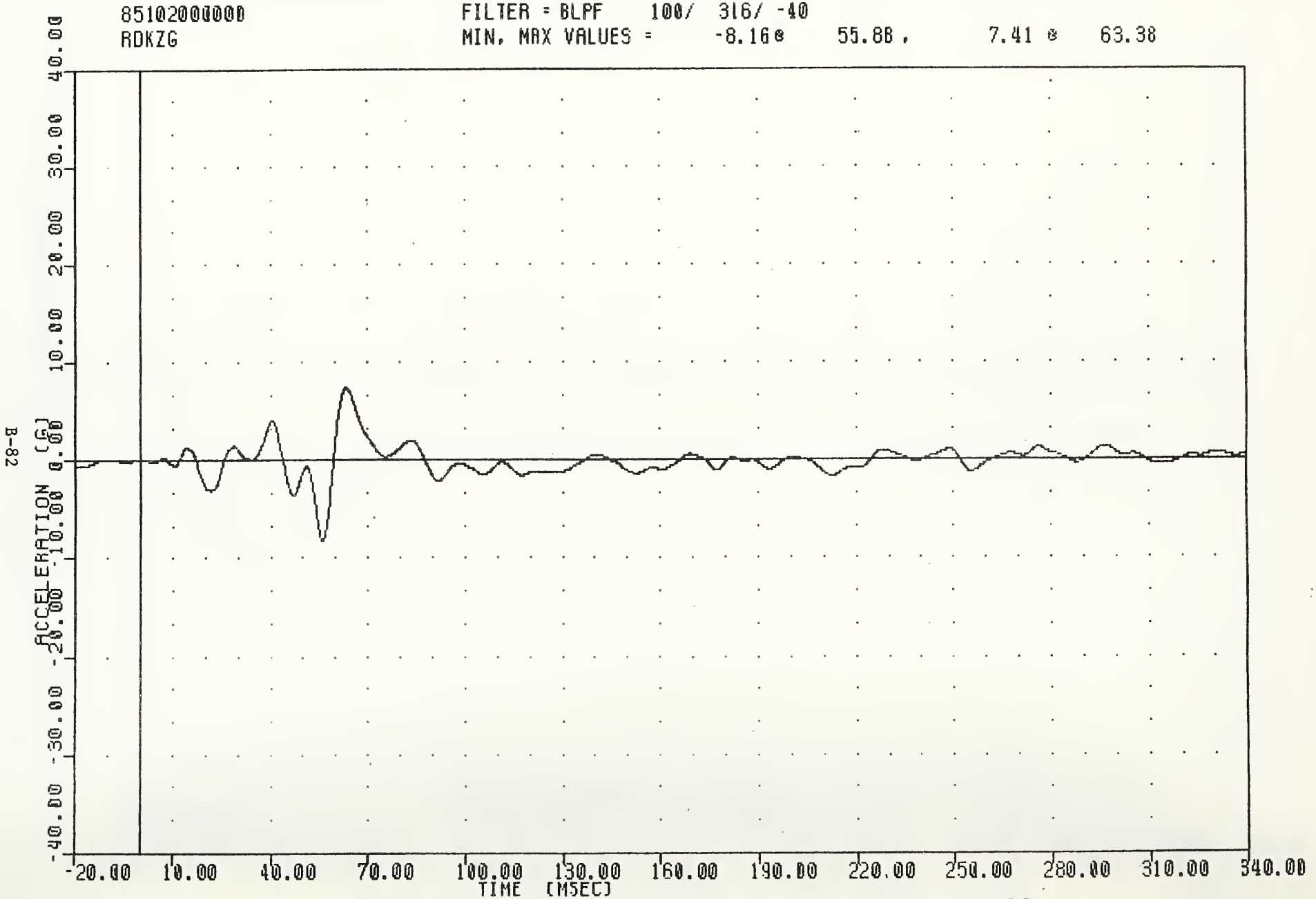


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
VEHICLE REAR DECK ACCELERATION X AXIS



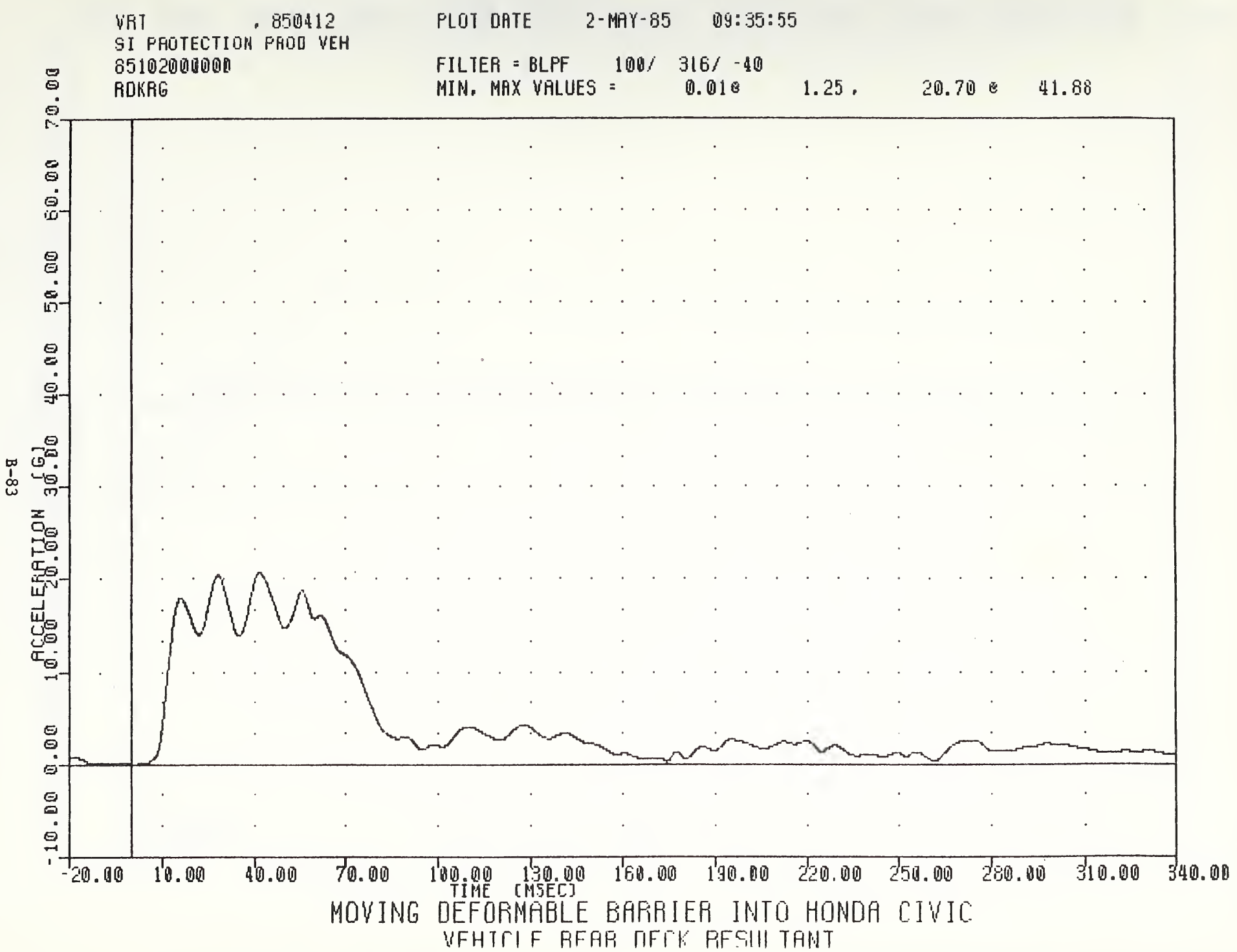
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

VEHICLE REAR DECK ACCELERATION Y AXIS



MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

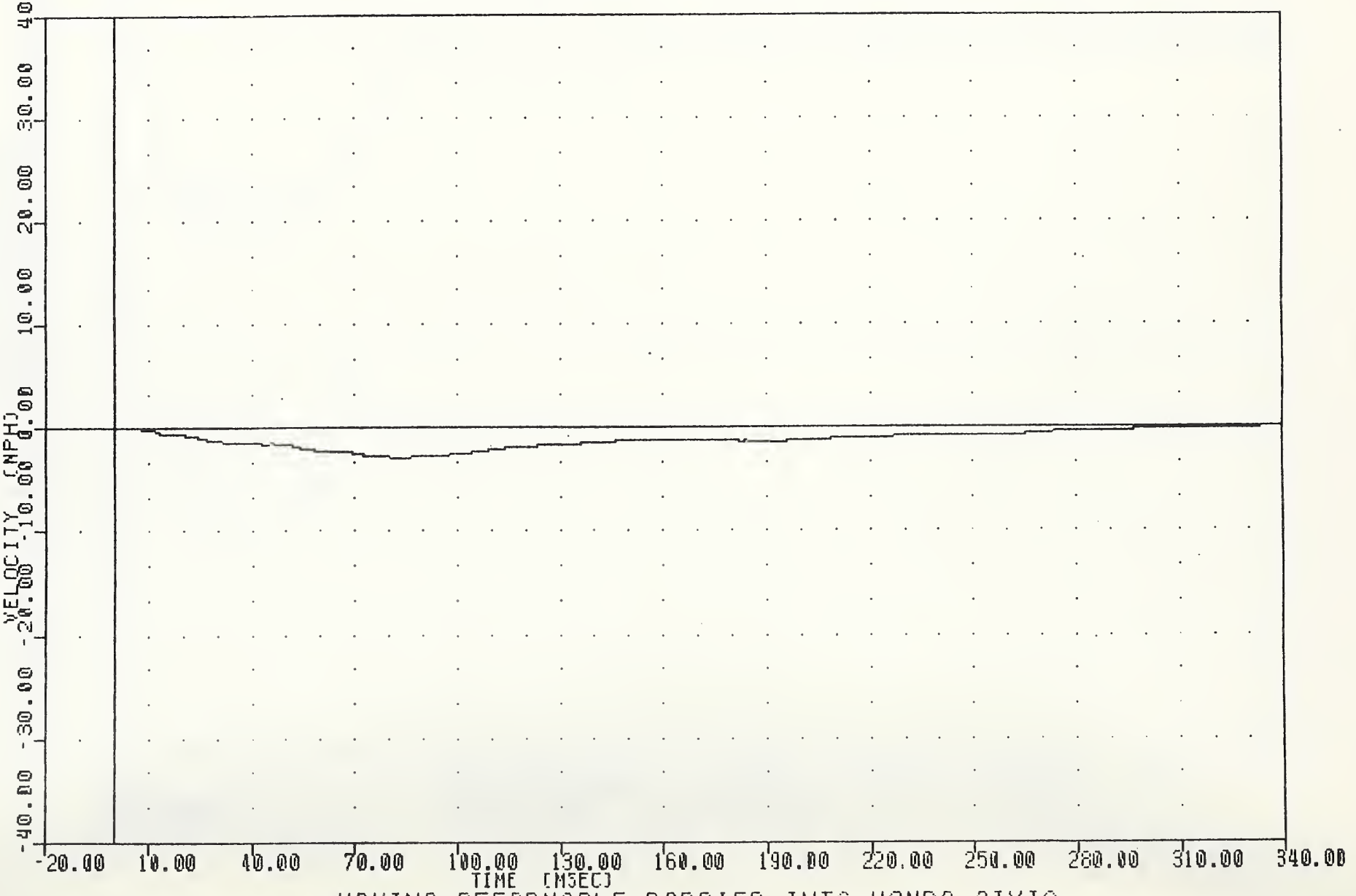
VEHICLE REAR DECK ACCELERATION Y AXIS


VRT , 850412
PLOT DATE 2-MAY-85 09:35:55
SI PROTECTION PROD VEH
85102000000
FILTER = BLPF 100/ 316/ -40
RDKRG
MIN, MAX VALUES = 0.01@ 1.25 , 20.70 @ 41.88
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
ACCELERATION [G]
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
VEHICLE REAR DECK RESULTANT

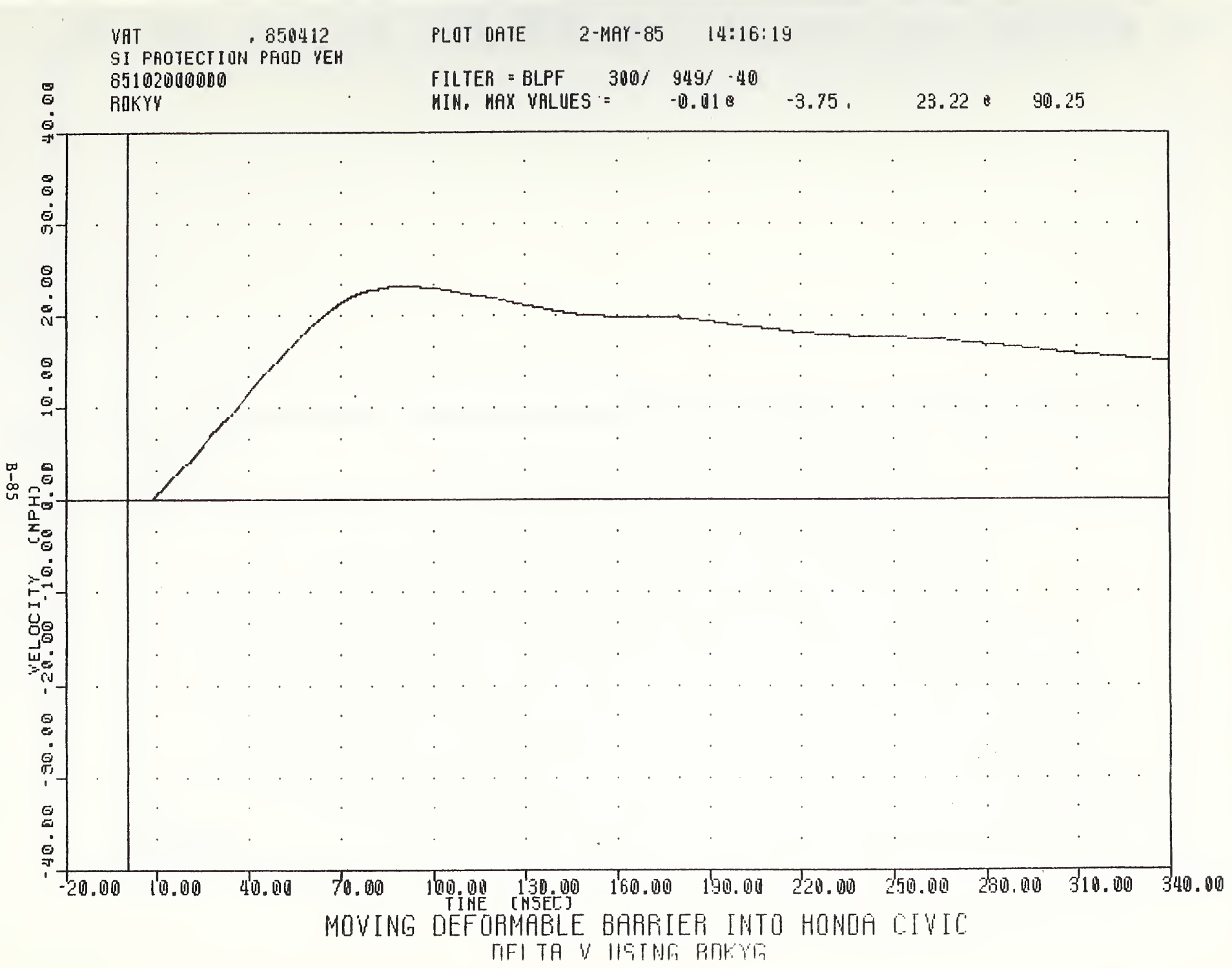
VRT , 850412
SI PROTECTION PROD VEH
85102000000
RDKXV

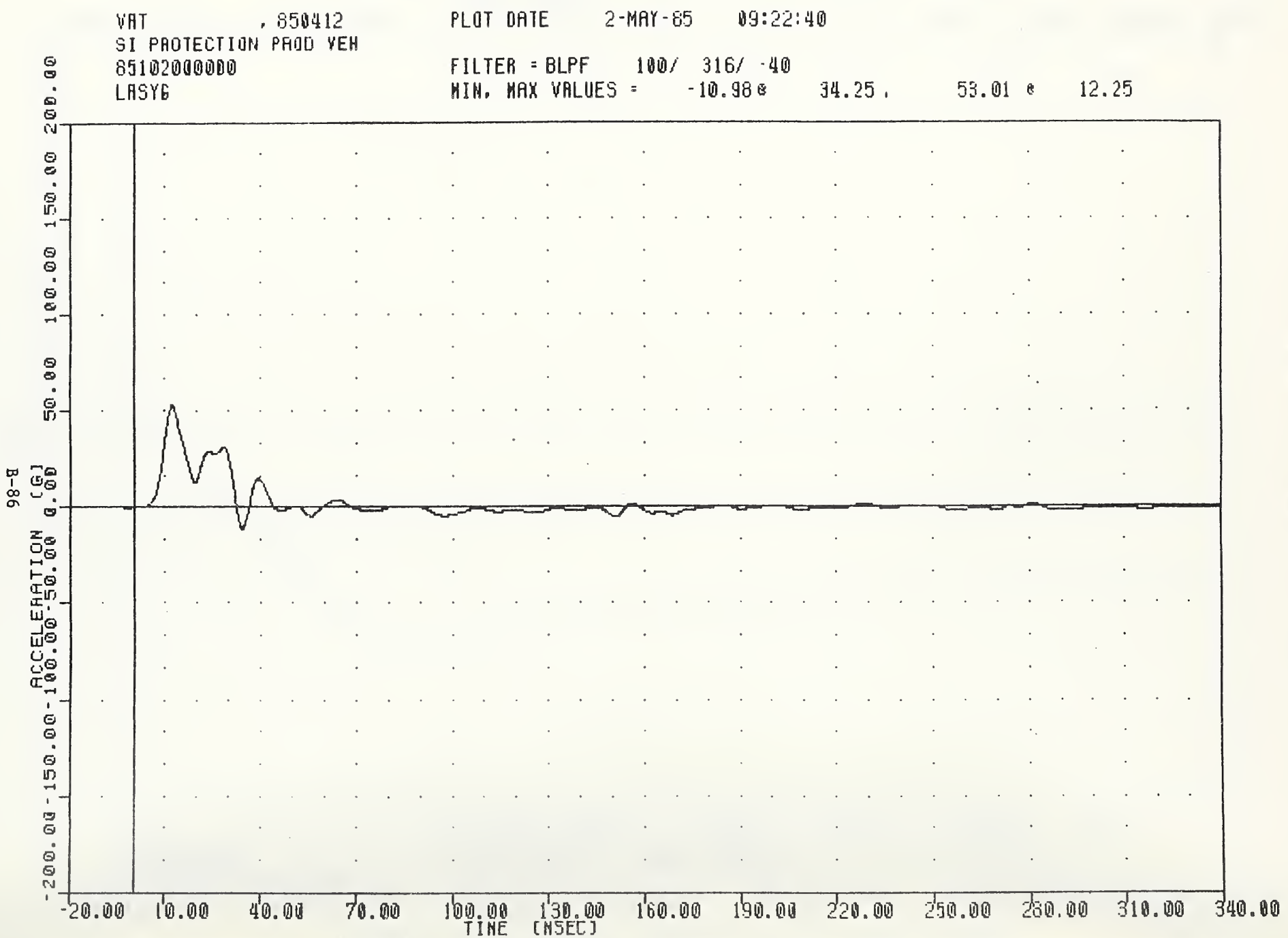
PLOT DATE 2-MAY-85 14:16:19

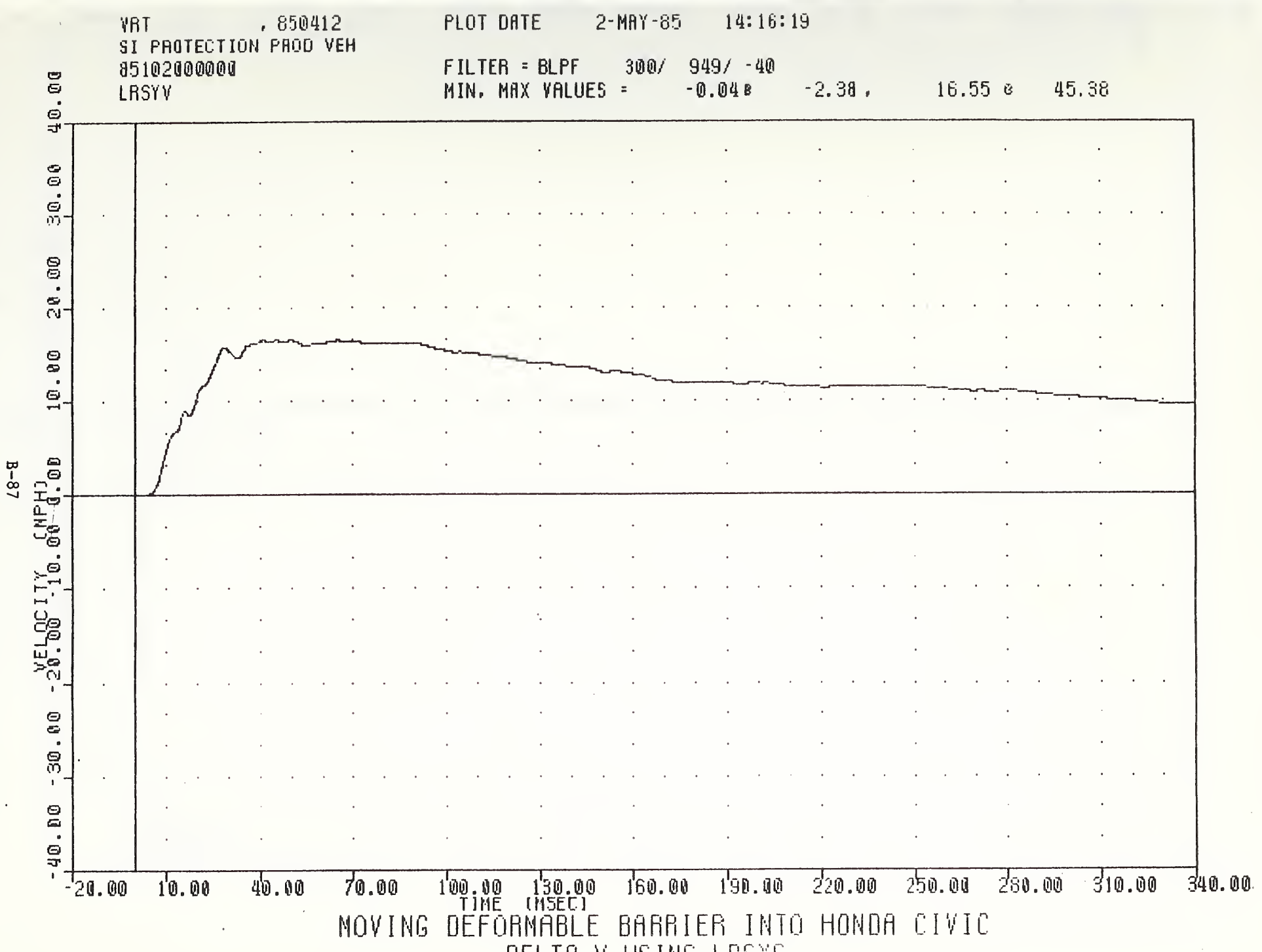
FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -2.85@ 83.75, 0.02 @ 4.00



MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING RDKXR


VAT , 850412
SI PROTECTION PROD VEH
851020G0000
ROKYV
PLOT DATE 2-MAY-85 14:16:19
FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -0.01 @ -3.75 , 23.22 @ 90.25
VELOCITY (MPH)
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-40.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING ROKYG


VAT , 850412
PLOT DATE 2-MAY-85 09:22:40
SI PROTECTION PROD VEH
85102000000
FILTER = BLPF 100/ 316/ -40
LASY6
MIN, MAX VALUES = -10.98 @ 34.25 , 53.01 @ 12.25
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
ACCELERATION (G)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
VEHICLE LEFT REAR SILL ACCELERATION Y AXIS

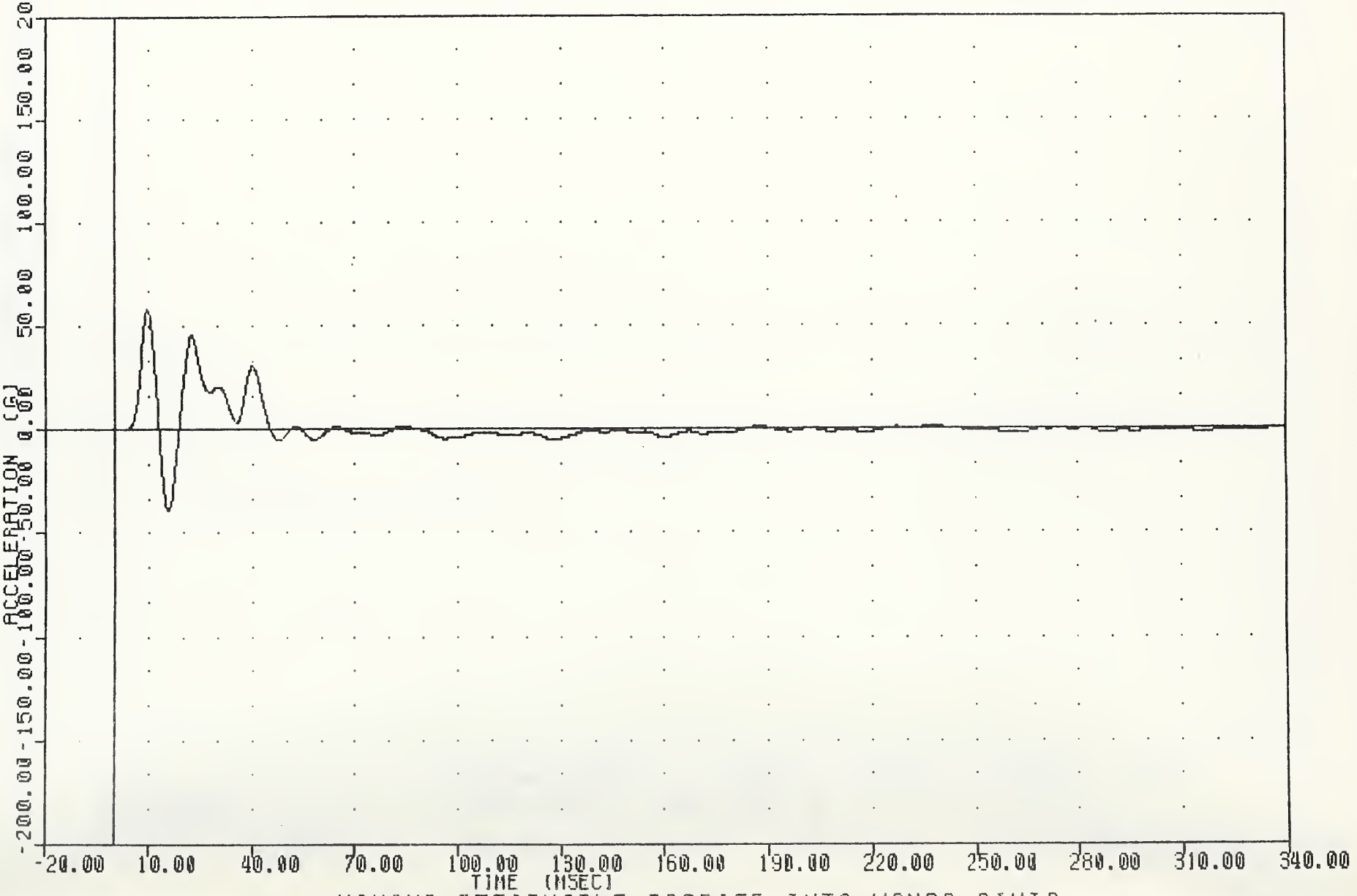


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING LRSYG

VRT , 850412
SI PROTECTION PROD VEH
85102000000
LFSYG

PLOT DATE 2-MAY-85 09:22:40

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -38.91 @ 15.63 , 58.15 @ 9.63

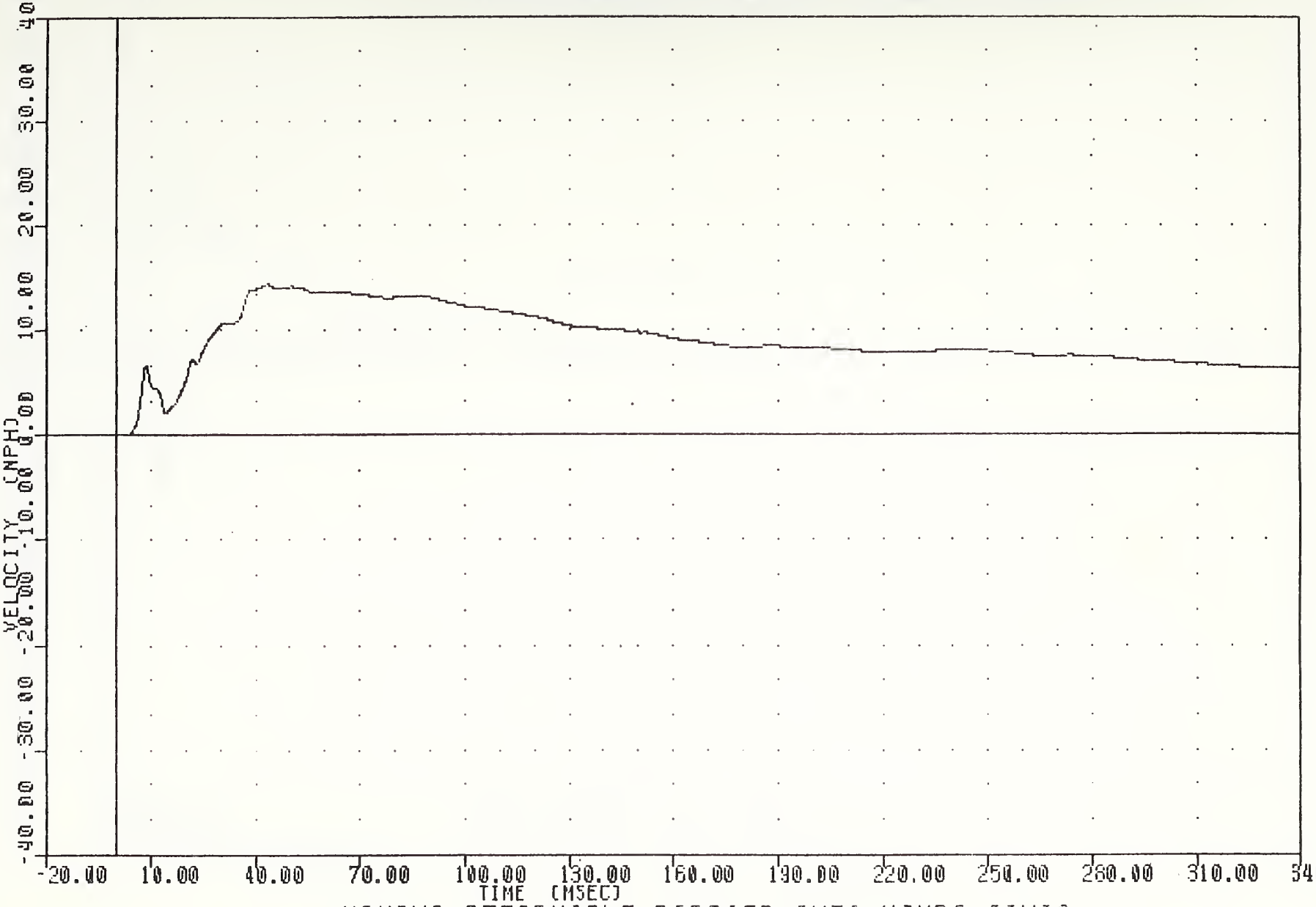


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
VEHICLE LEFT FRONT SILL ACCELERATION Y AXIS

VRT , 850412
SI PROTECTION PROD VEH
85102000000
LFSYV

PLOT DATE 2-MAY-85 14:16:19

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = 0.00 @ -20.00 , 14.38 @ 43.50

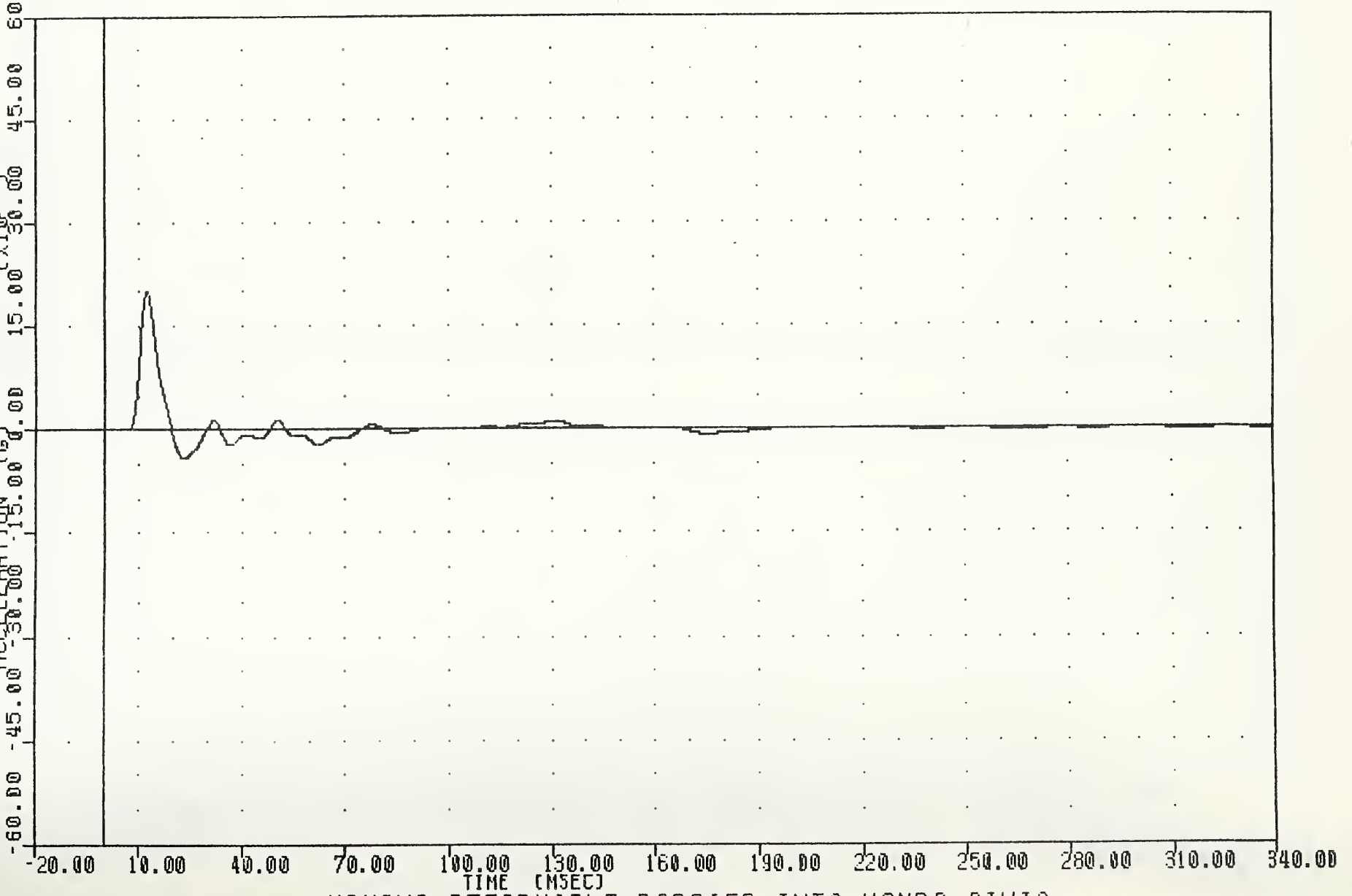


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING LFSYG

VRT , 850412
SI PROTECTION PROD VEH
8510200@@@@
LFDYG1

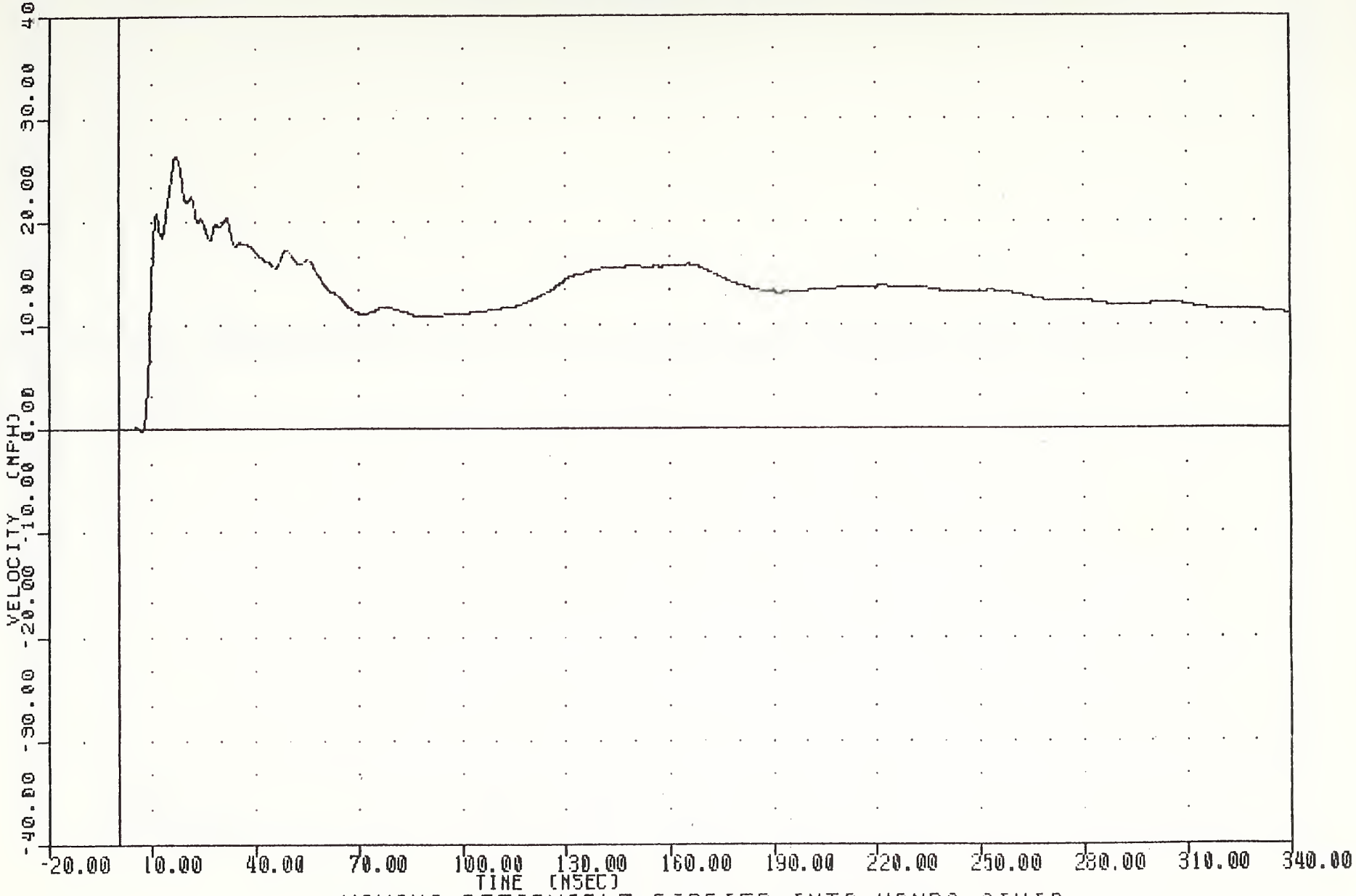
PLOT DATE 2-MAY-85 09:22:40

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -42.05@ 23.13 , 200.08 @ 12.50

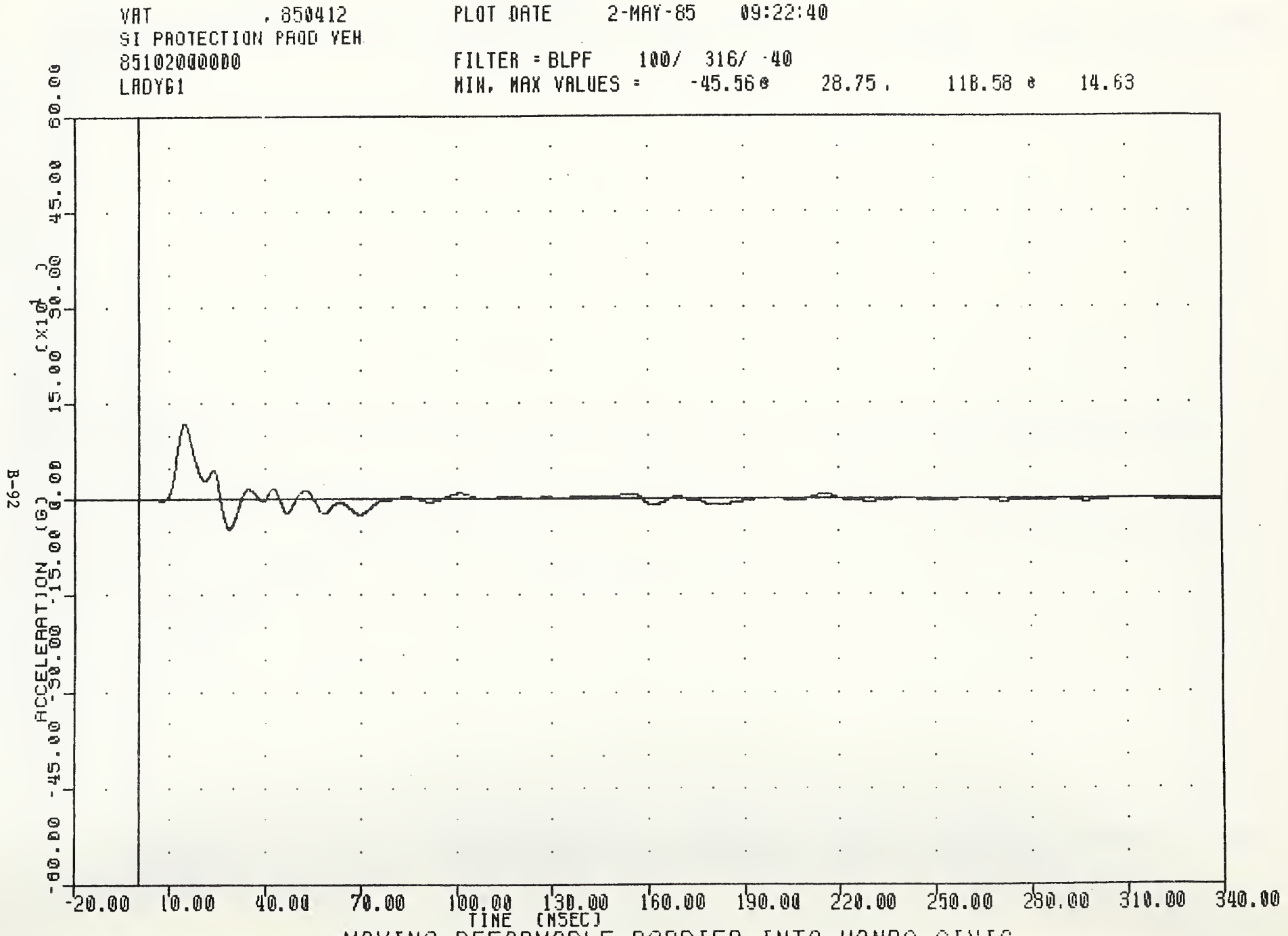


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
VEHICLE LEFT FRONT DOOR (POSITION 6) ACCELERATION Y AXIS

VAT , 850412 PLOT DATE 2-MAY-85 14:16:19
SI PROTECTION PROD VEH
851020G0000 FILTER = BLPF 300/ 949/ -40
LFDYV1 MIN. MAX VALUES = -0.13 @ 6.75 , 26.28 @ 16.88

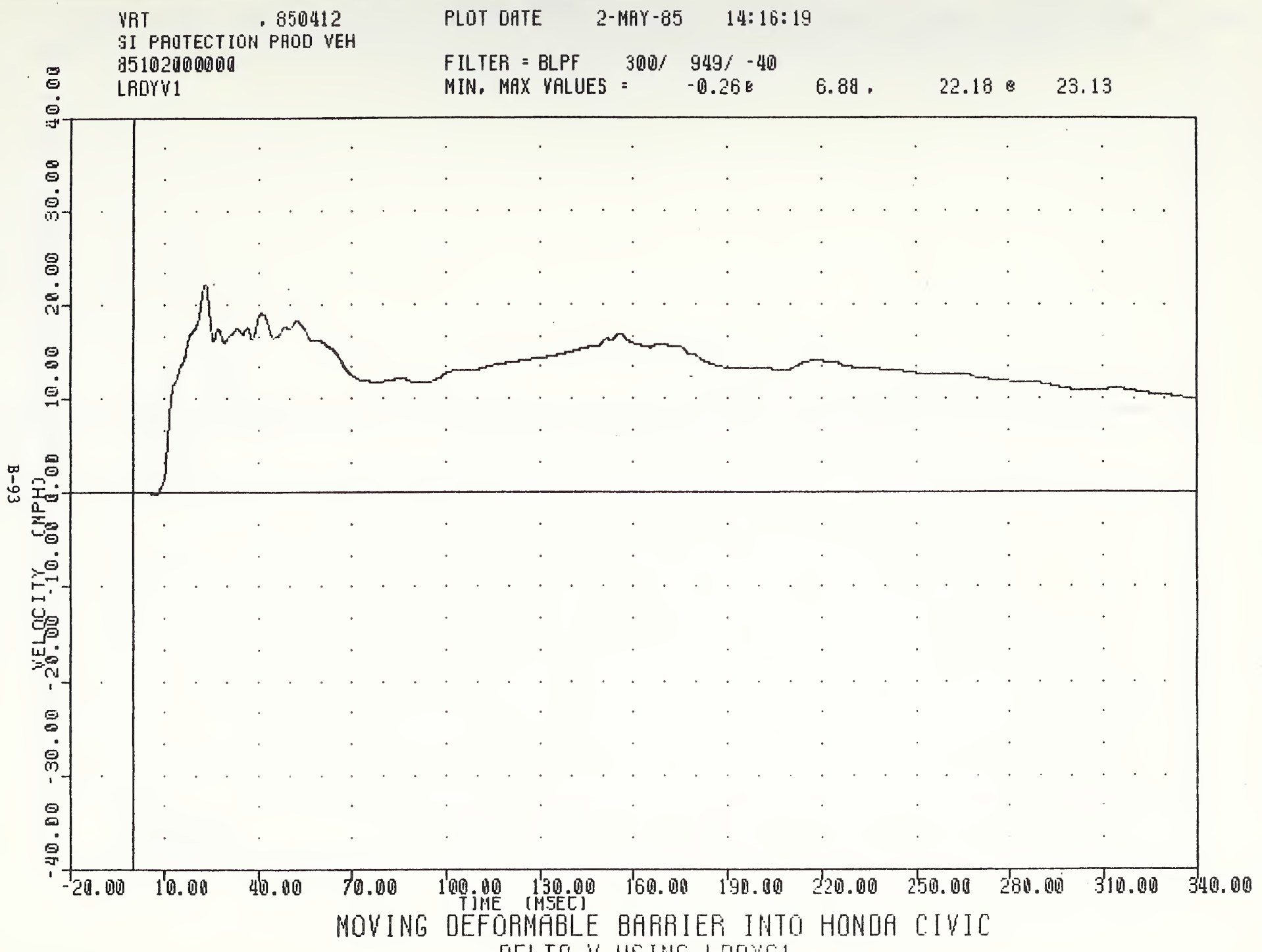


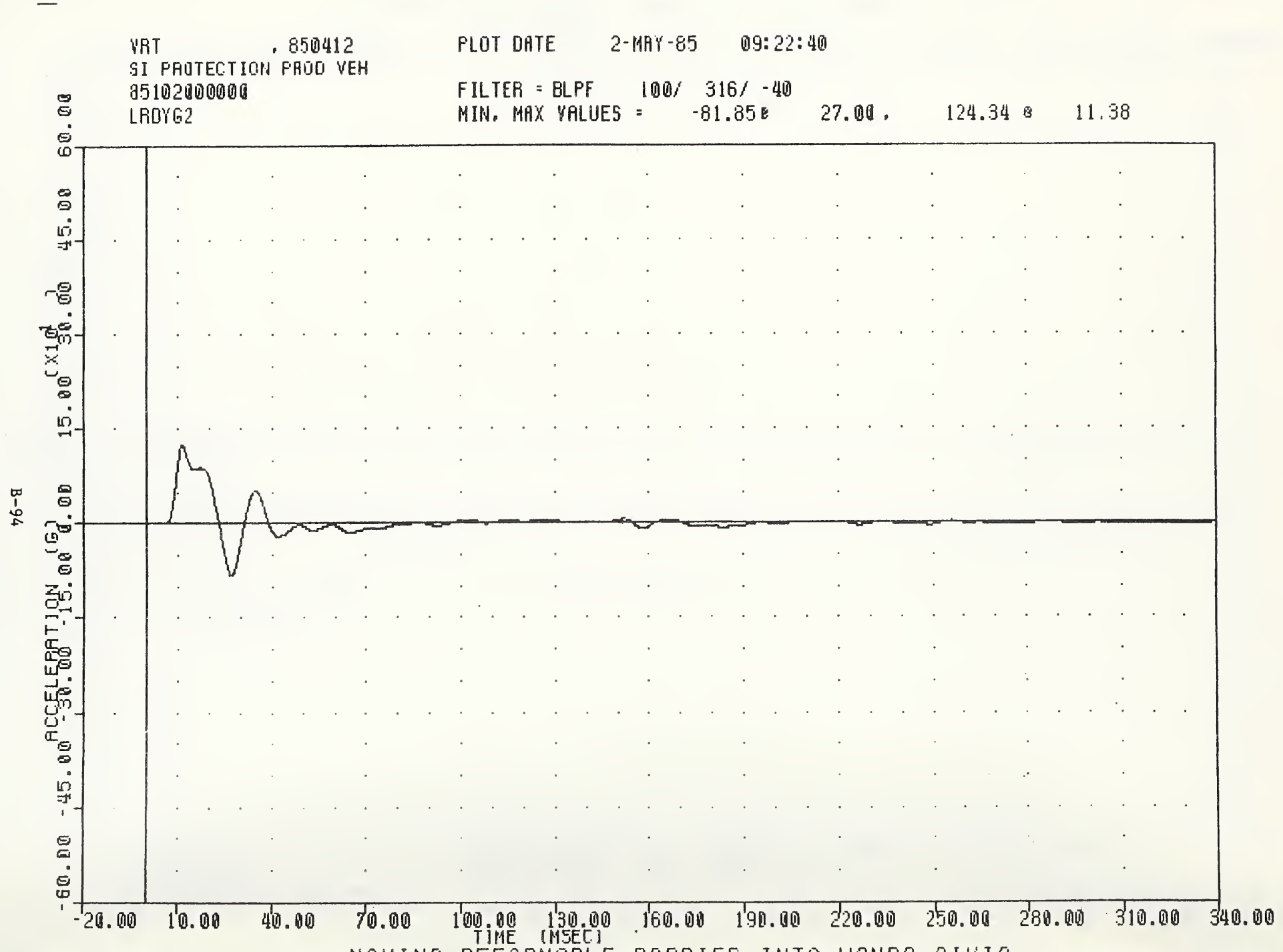
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING LFDYG1



MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

VEHICLE LEFT REAR DOOR (POSITION 8) ACCELERATION Y AXIS

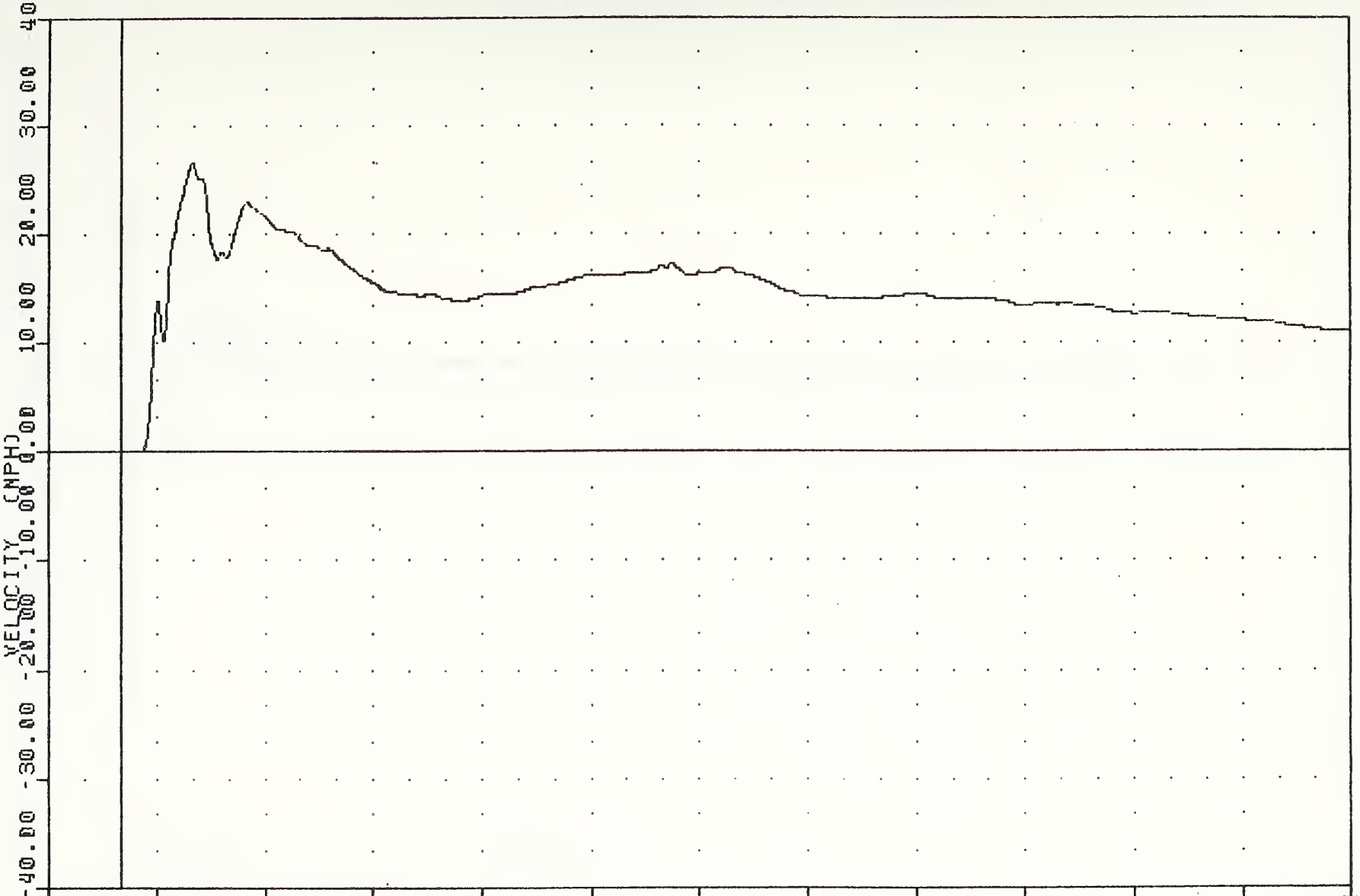

VRT , 850412
SI PROTECTION PROD VEH
85102000000
LRDYV1
PLOT DATE 2-MAY-85 14:16:19
FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -0.26 @ 6.88 , 22.18 @ 23.13
VELOCITY (MPH)
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-40.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING LRDYG1



MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

VEHICLE LEFT REAR DOOR (POSITION 9) ACCELERATION Y AXIS

VRT , 850412 PLOT DATE 2-MAY-85 14:16:19
SI PROTECTION PROD VEH
8510200@000D FILTER = BLPF 300/ 949/ -40
LRDYV2 MIN. MAX VALUES = -0.02@ 5.50 , 26.65 @ 19.75

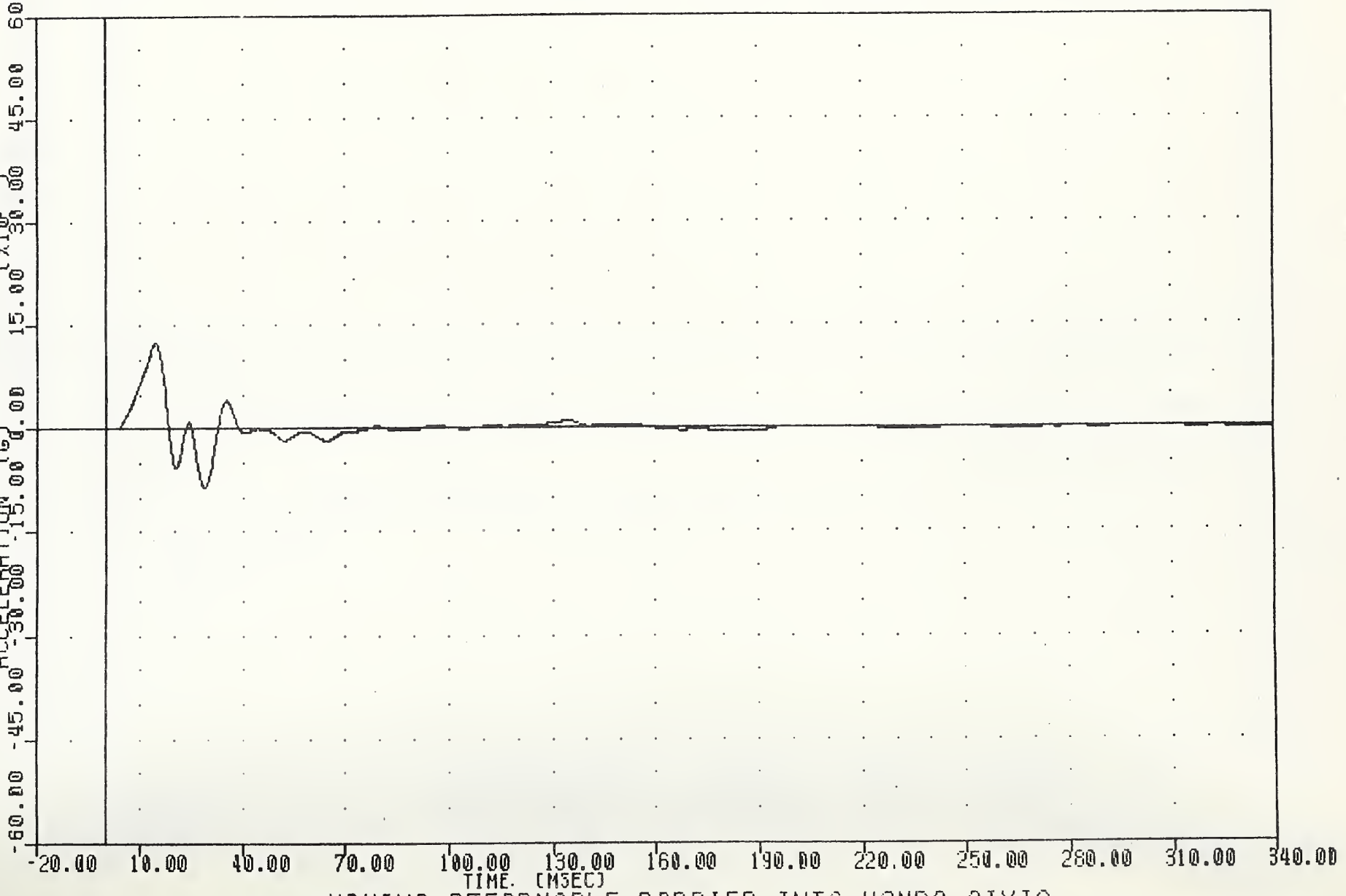


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING LRDYV2

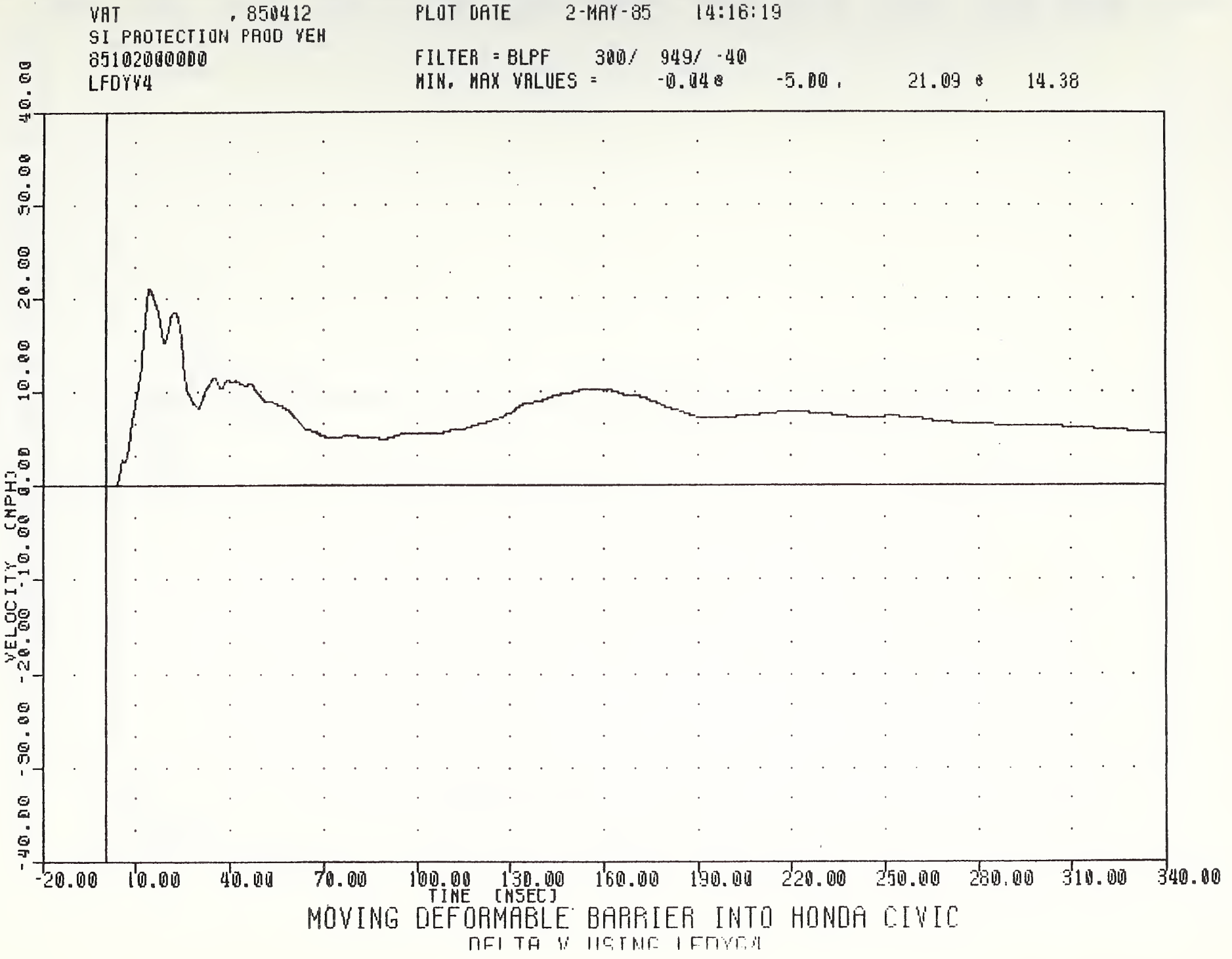
VRT , 850412
SI PROTECTION PROD VEH
8510200000D
LFDYG4

PLOT DATE 2-MAY-85 09:22:40

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -85.73@ 29.00 , 125.27 @ 14.63



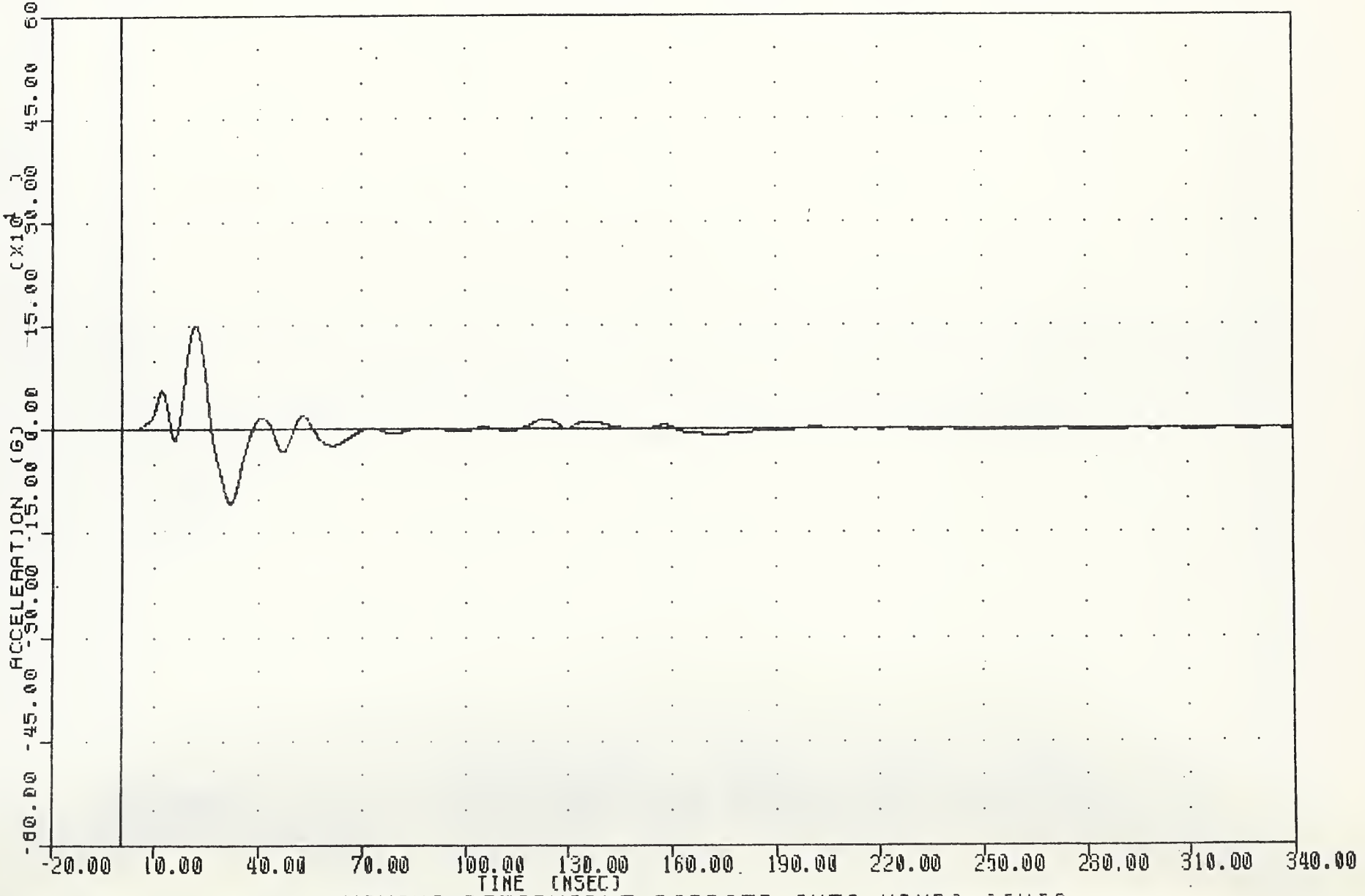
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
VEHICLE LEFT FRONT DOOR (POSITION 10) ACCELERATION Y AXIS


VAT , 850412
SI PROTECTION PROD VEH
85102000000
LFDYV4
PLOT DATE 2-MAY-85 14:16:19
FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -0.04 @ -5.00 , 21.09 @ 14.38
40.00
50.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-40.00
VELOCITY (MPH)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING LFDYV4

VRT , 850412
SI PROTECTION PROD VEH
85102000000
LFDY65

PLOT DATE 2-MAY-85 09:22:40

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -106.59 @ 31.75 , 151.12 @ 21.75

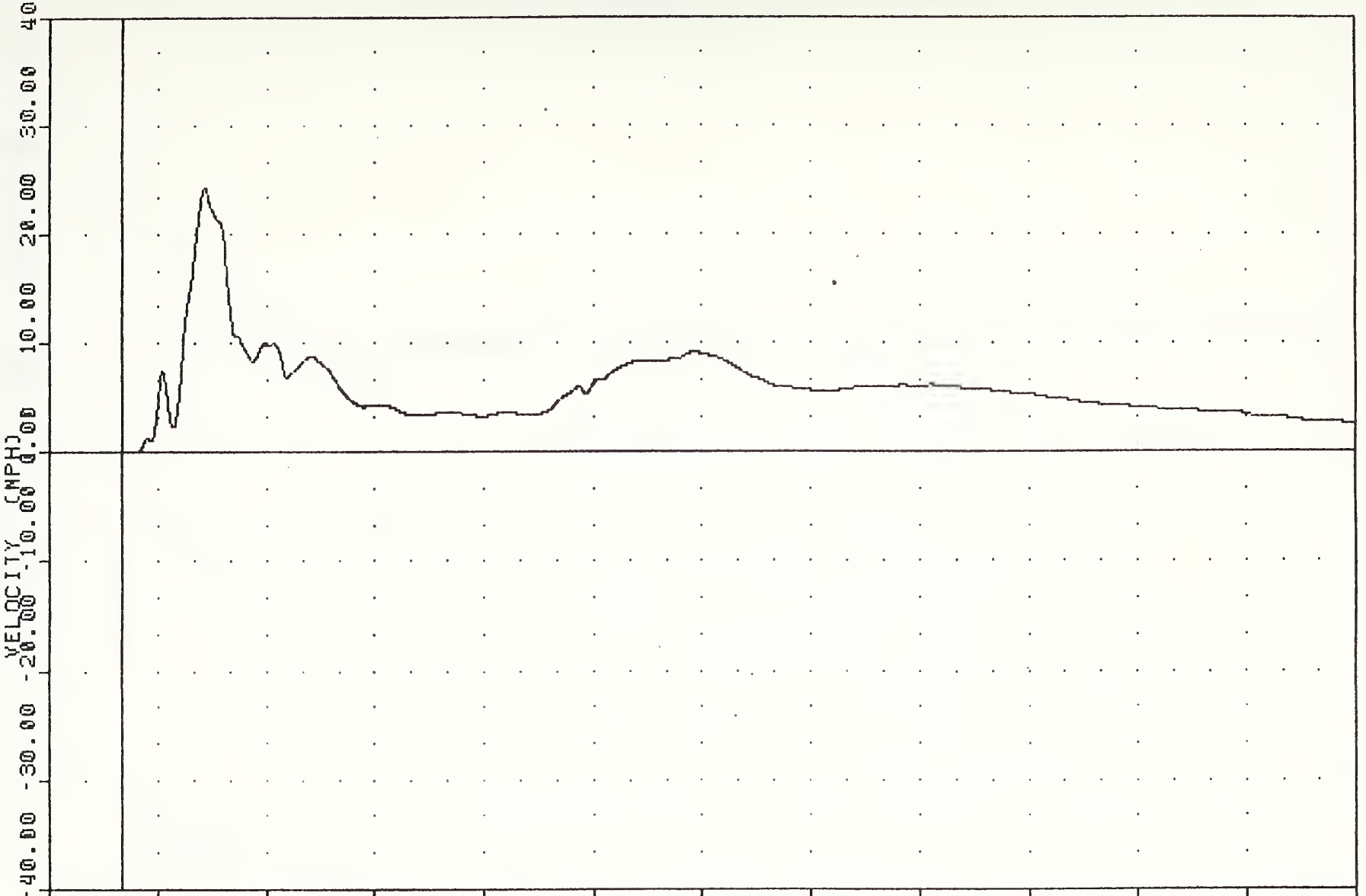


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
VEHICLE LEFT FRONT DOOR (POSITION 11) ACCELERATION Y AXIS

VRT , 850412
SI PROTECTION PROD VEH
85102000000
LFDYV5

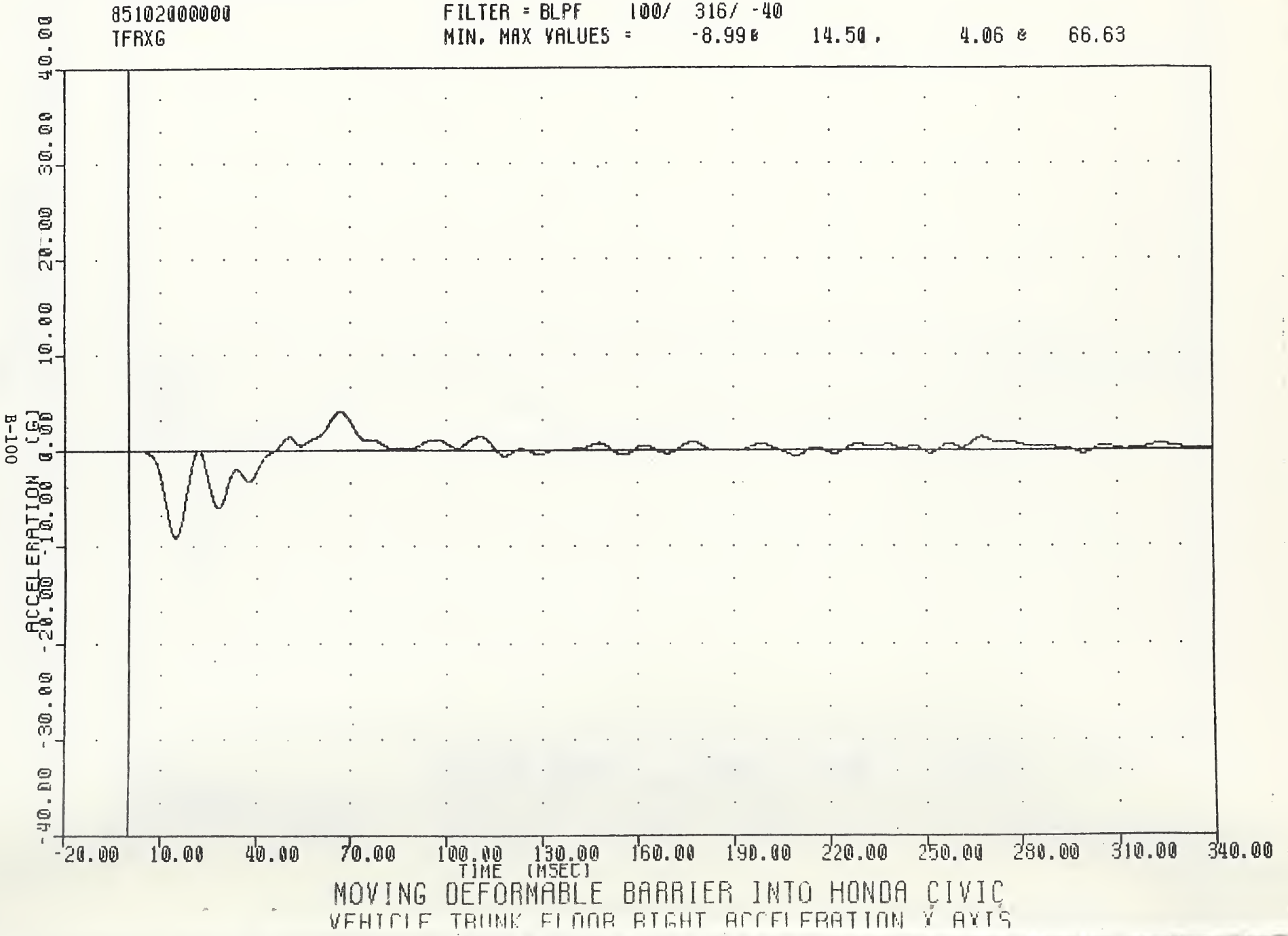
PLOT DATE 2-MAY-85 14:16:19

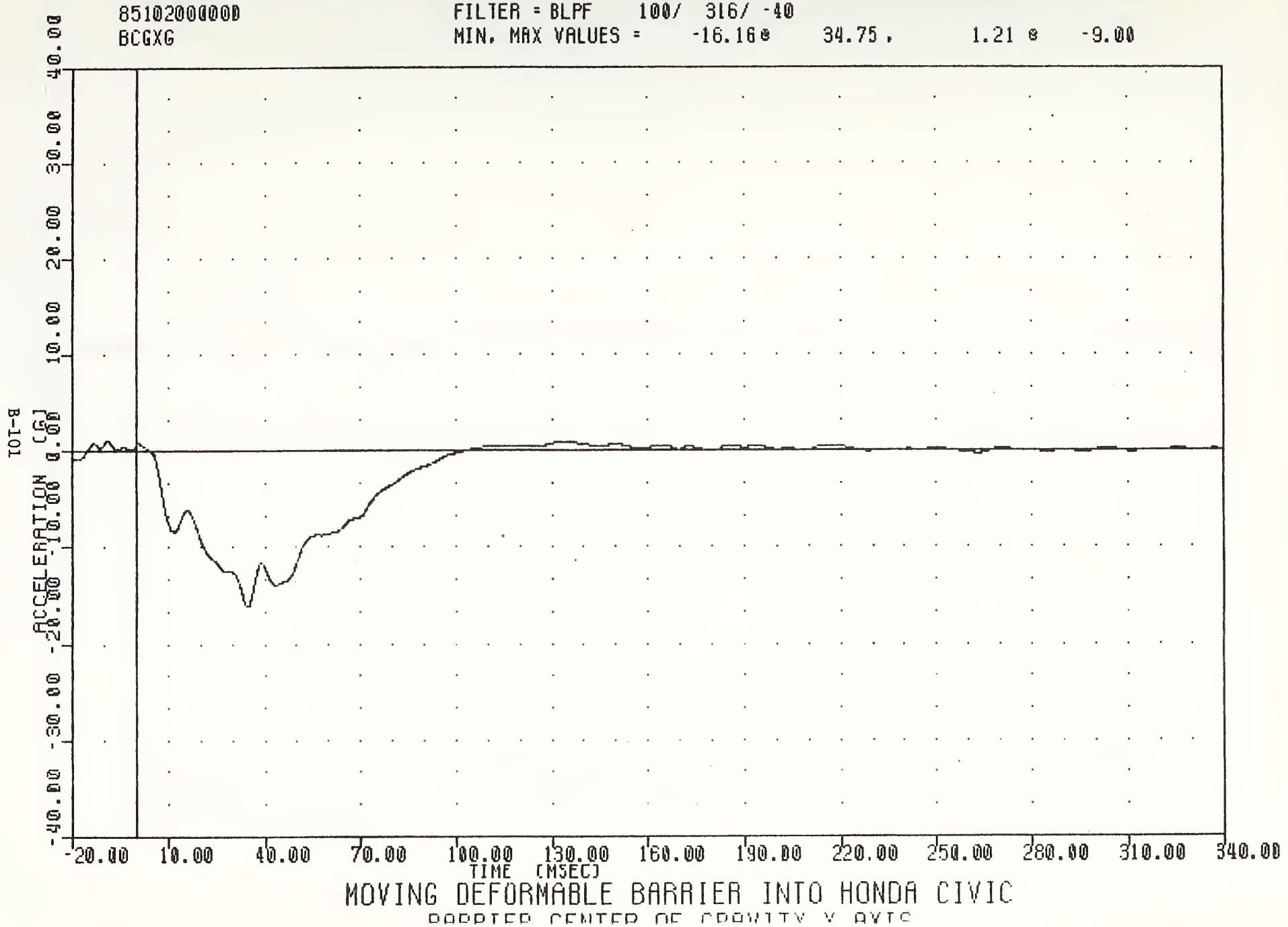
FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = 0.00 , -20.00 , 24.25 @ 22.75



MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

DELTA V USING LEDYCE

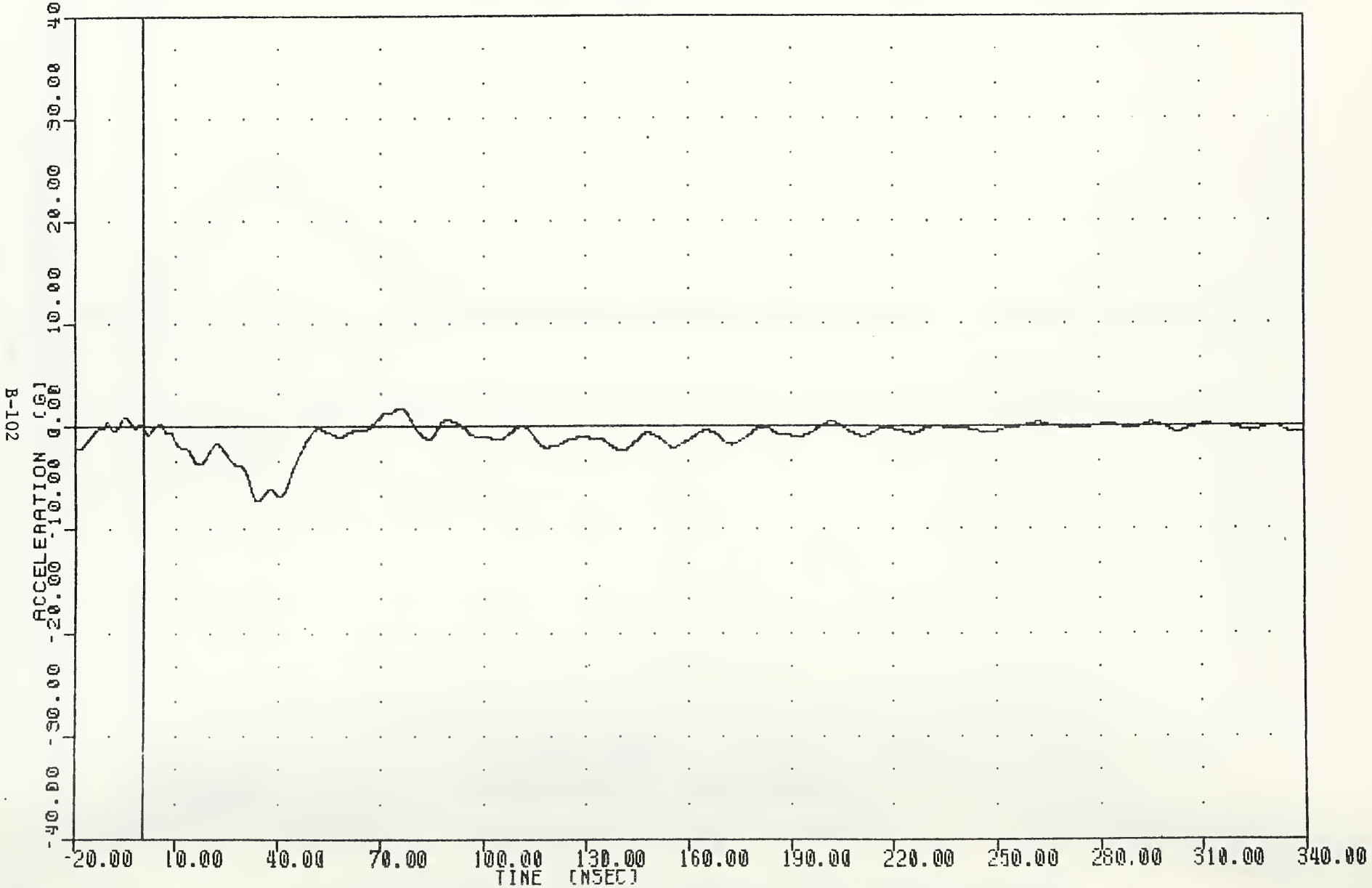

VRT , 850412
SI PROTECTION PROD VEH
85102000000
TFRXG
PLOT DATE 2-MAY-85 09:49:51
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -8.99@ 14.50 , 4.06 @ 66.63
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-40.00
ACCELERATION (G)
B-100
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
VEHICLE TRUNK FLOOR RIGHT ACCELERATION Y AXIS


VRT , 850412
PLOT DATE 2-MAY-85 09:49:51
SI PROTECTION PROD VEH
8510200000D
FILTER = BLPF 100/ 316/ -40
BCGXG
MIN, MAX VALUES = -16.16 @ 34.75 , 1.21 @ -9.00
ACCELERATION [G]
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-40.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
BARRIER CENTER OF GRAVITY X AXIS

VAT , 850412
SI PROTECTION PROD VEH
85102000000
BCGY6

PLOT DATE 2-MAY-85. 09:49:51

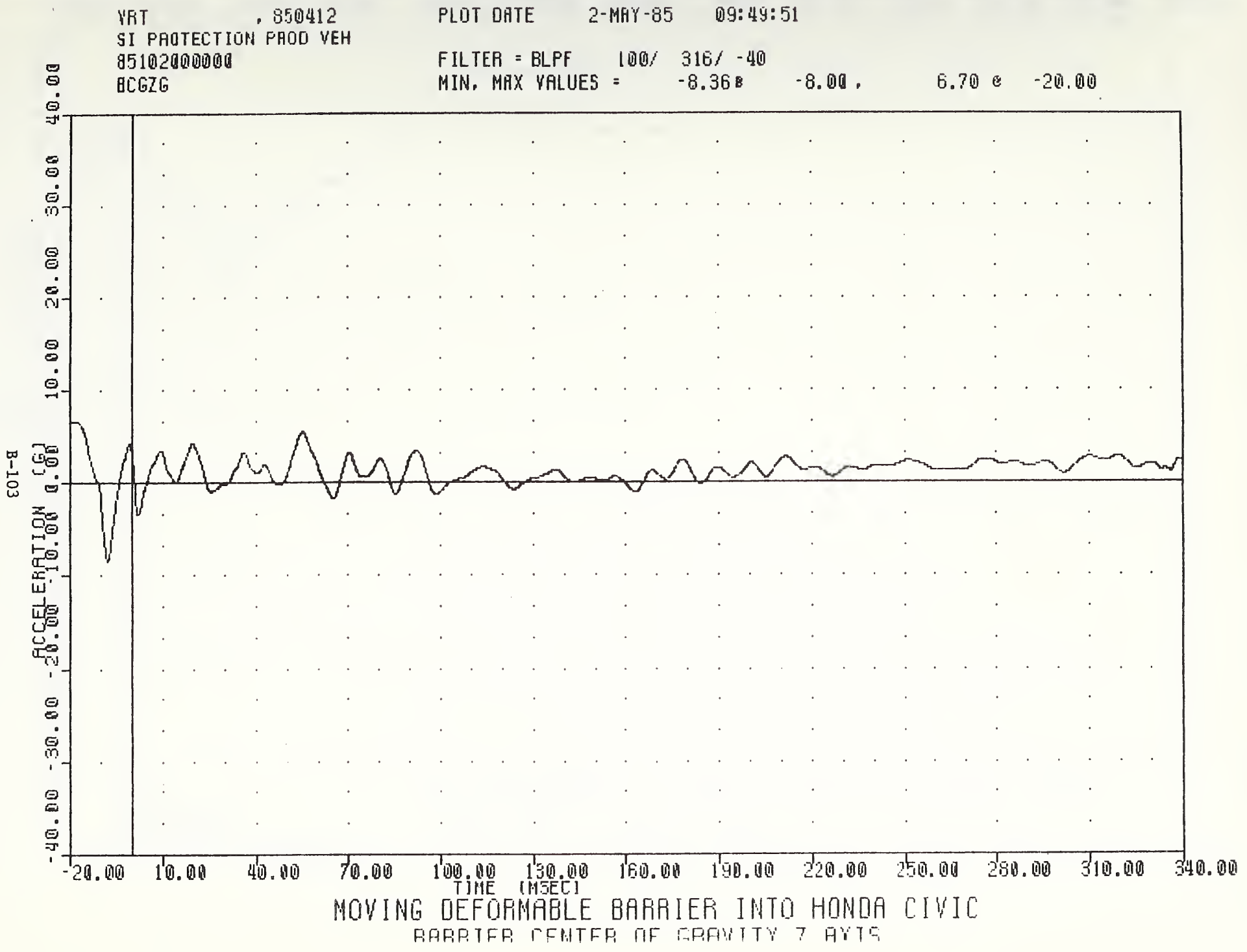
FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -7.19@ 34.00. 1.82 @ 75.75



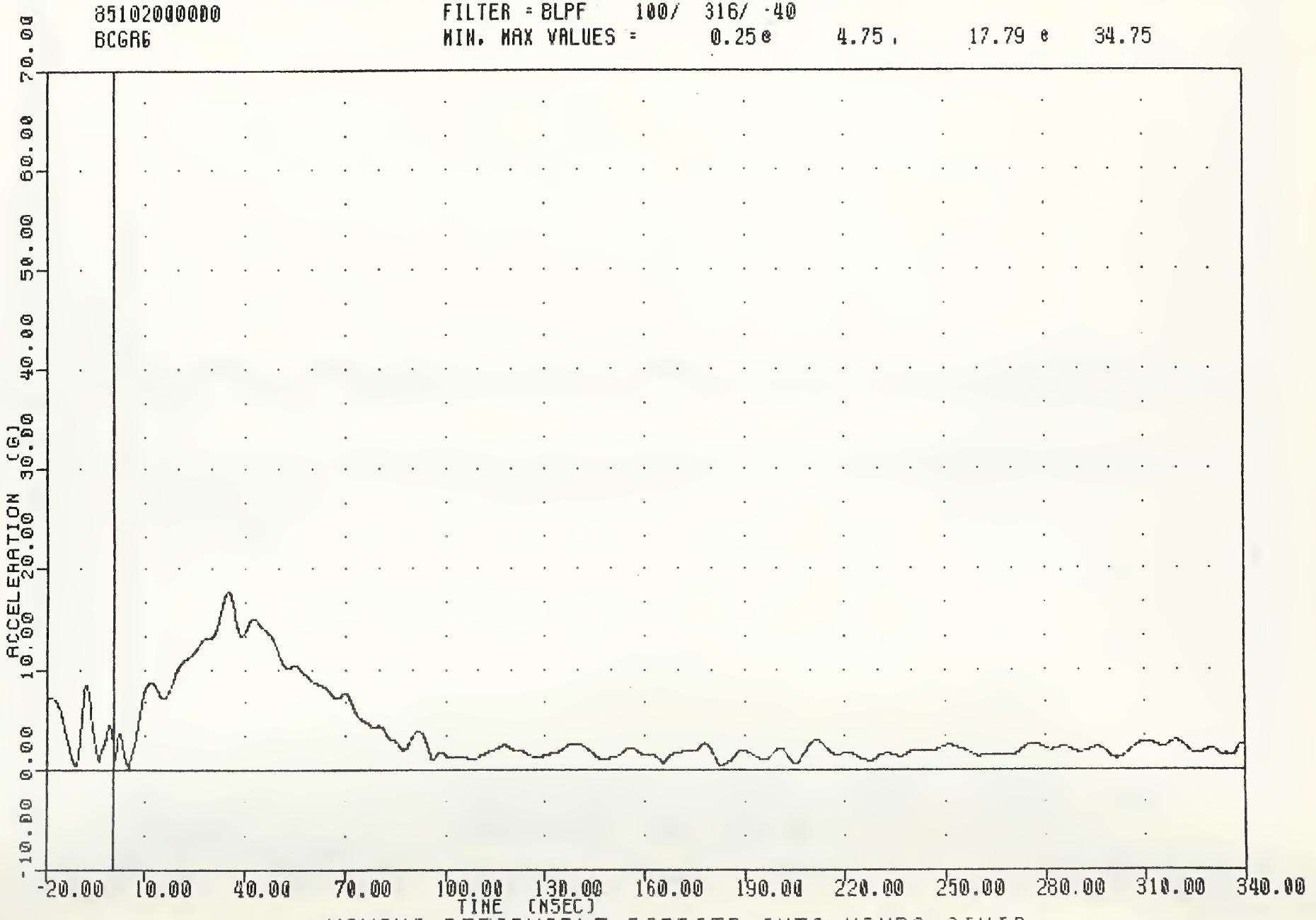
B-102

MOVING DEFORMABLE BARRIER INTO HONDA CIVIC

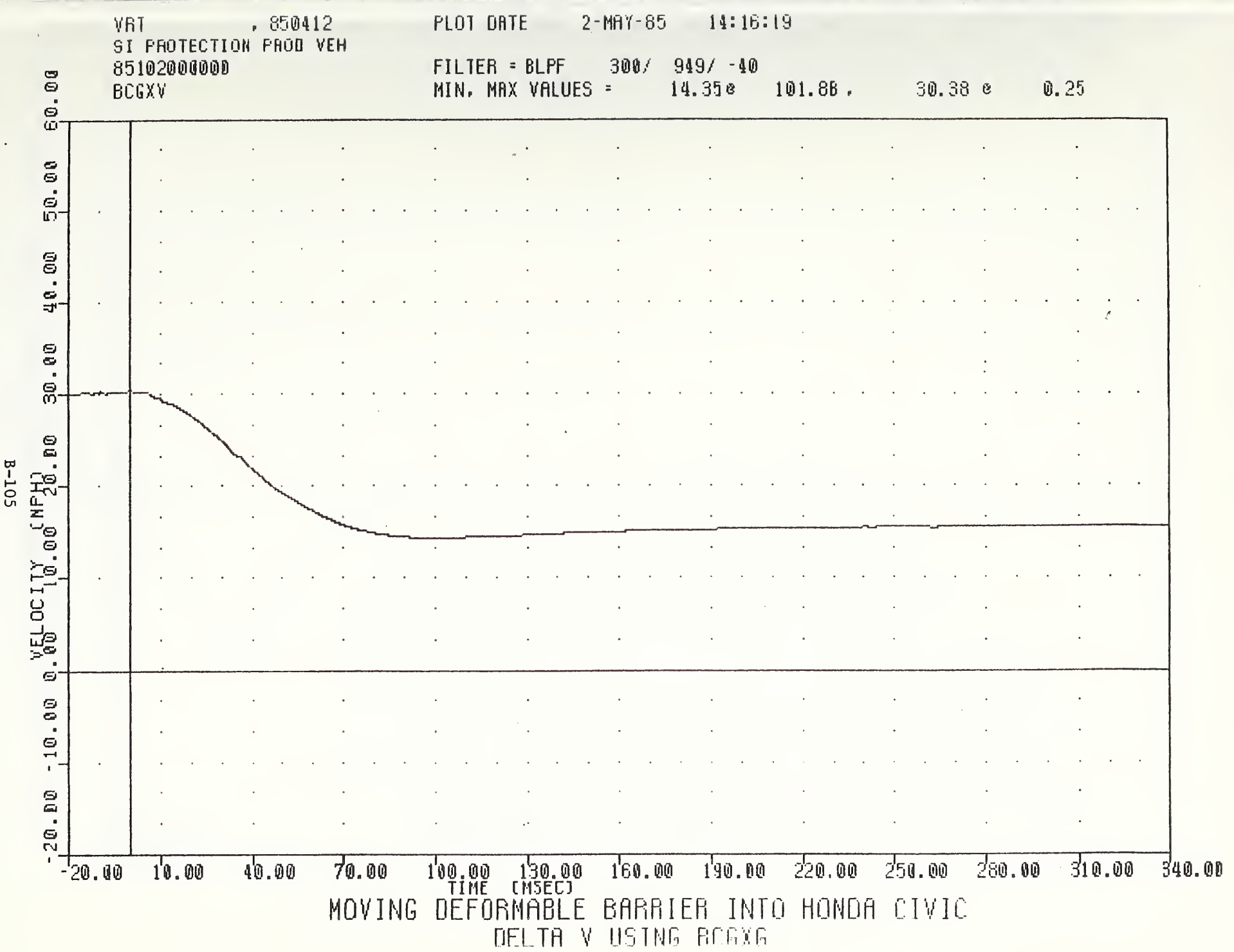
BARRIER CENTER OF GRAVITY X AXIS


VRT , 850412
SI PROTECTION PROD VEH
85102000000
BCGZG
PLOT DATE 2-MAY-85 09:49:51
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -8.36 @ -8.00 , 6.70 @ -20.00
ACCELERATION (G)
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-40.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
BARRIER CENTER OF GRAVITY Y AXIS

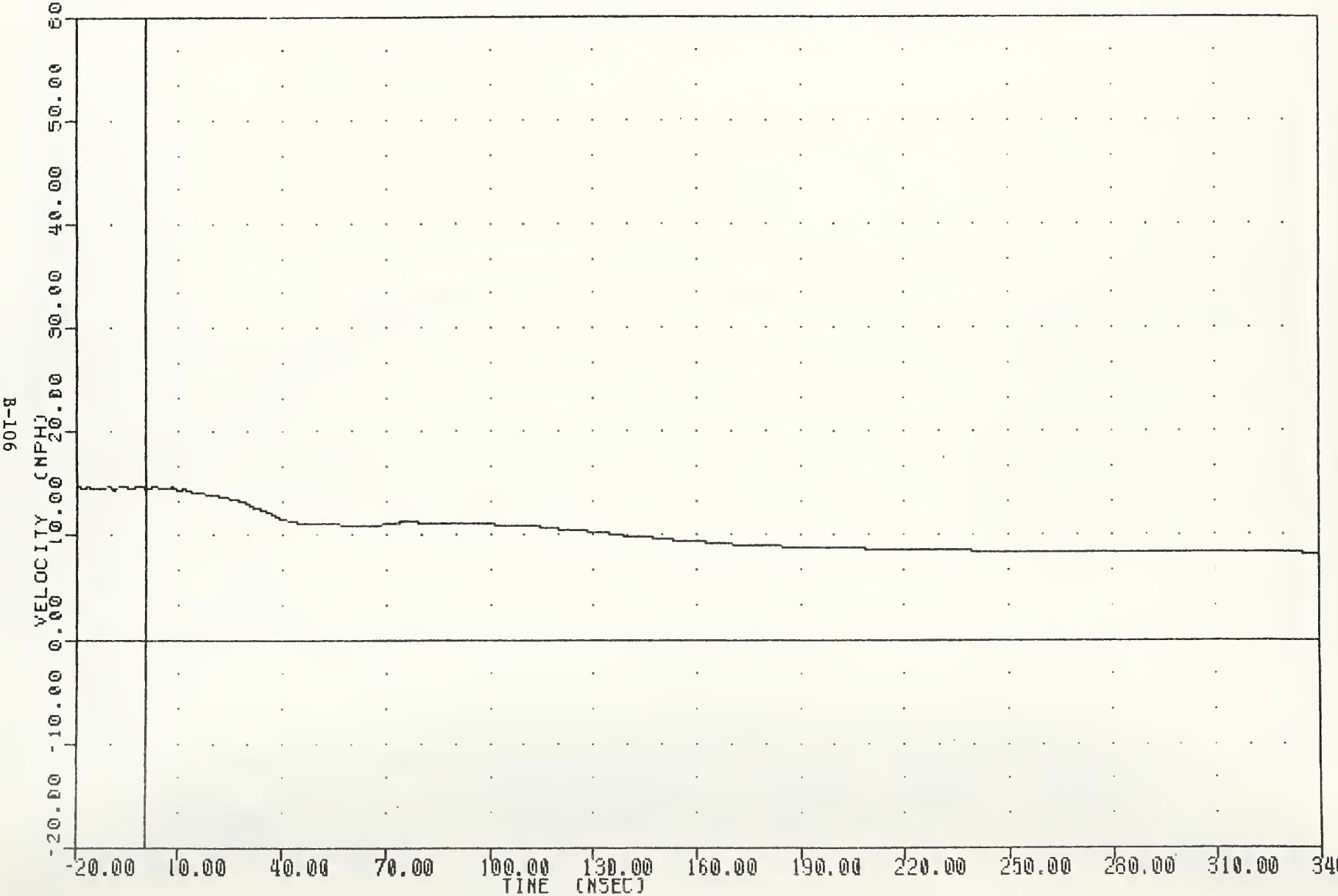
VRT , 850412 PLOT DATE 2-MAY-85 09:35:55
SI PROTECTION PROD VEH
85102000000 FILTER = BLPF 100/ 316/ -40
BCGR6 MIN, MAX VALUES = 0.25@ 4.75, 17.79@ 34.75



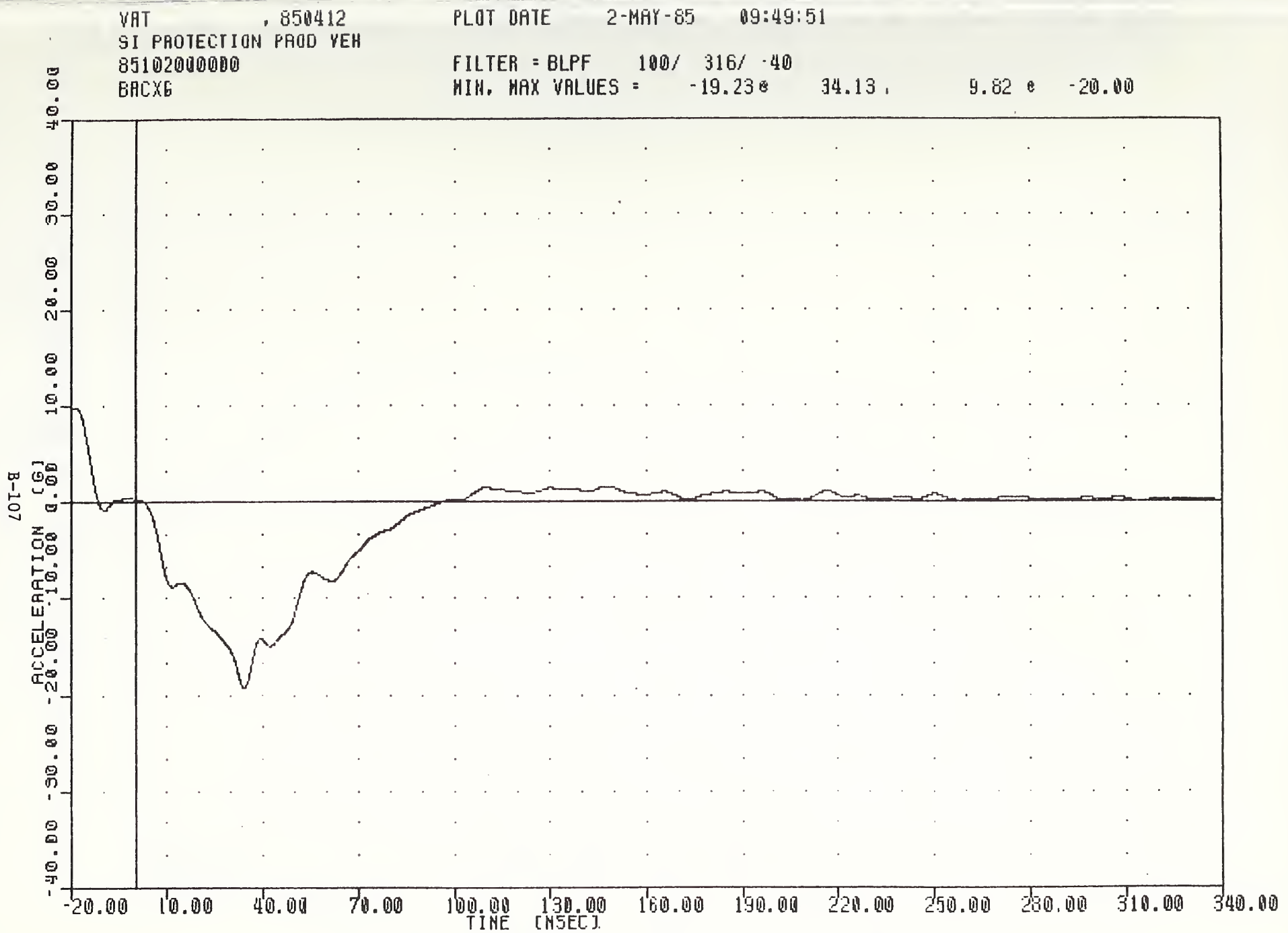
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
BARRIER CG RESULTANT


VRT , 850412
PLOT DATE 2-MAY-85 14:16:19
SI PROTECTION PROD VEH
85102000000
FILTER = BLPF 300/ 949/ -40
BCGXV
MIN, MAX VALUES = 14.35@ 101.86 , 30.38 @ 0.25
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
VELOCITY (MPH)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING BCGXG

VAT , 850412 PLOT DATE 2-MAY-85 14:16:19
SI PROTECTION PROD VEH
85102000000
BCGYV FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = 8.21 @ 340.00 , 14.80 @ -1.00



MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING BCGYG

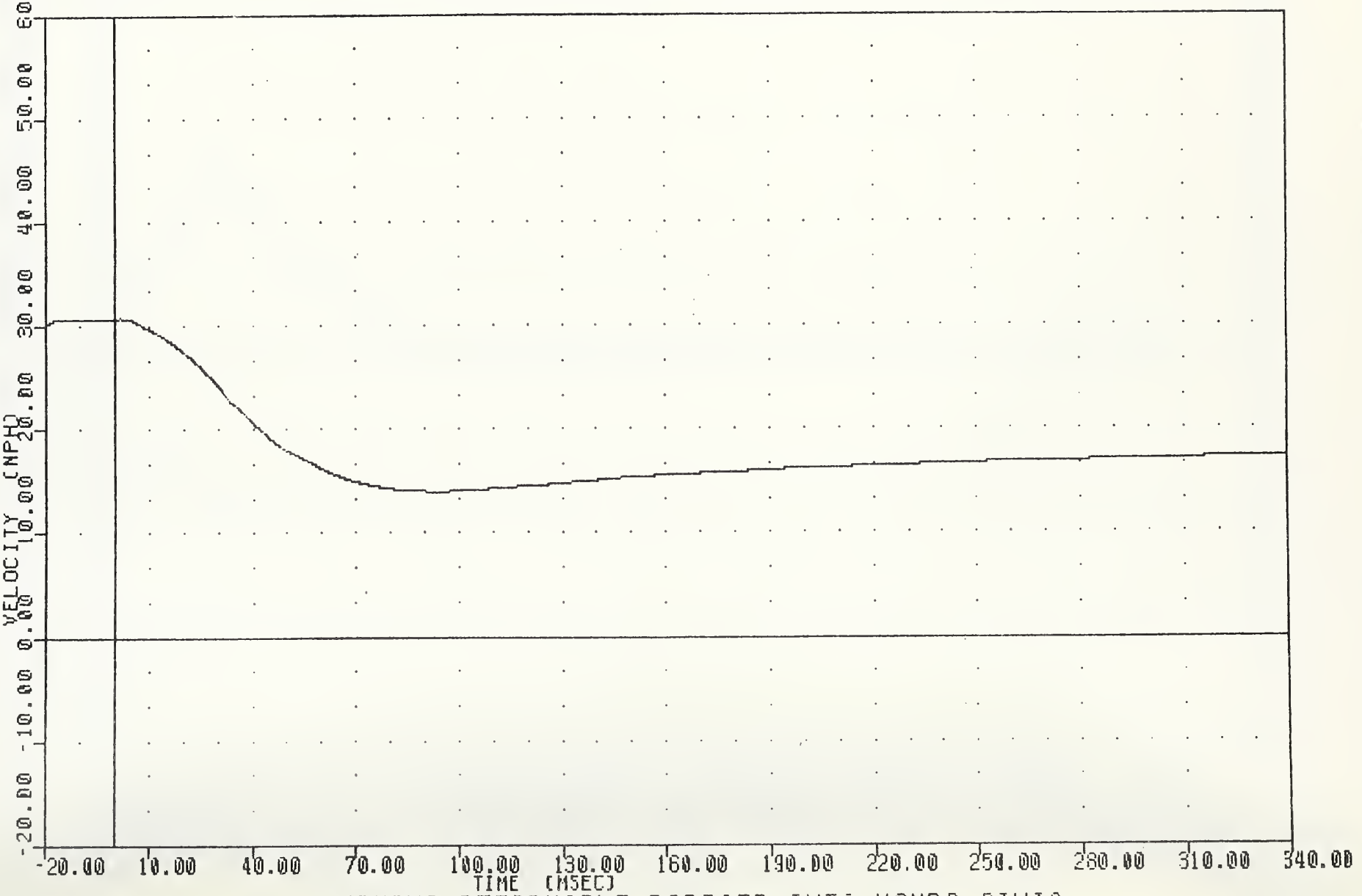


MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
BARRIER REAR CROSSMEMBER ACCELERATION X AXIS

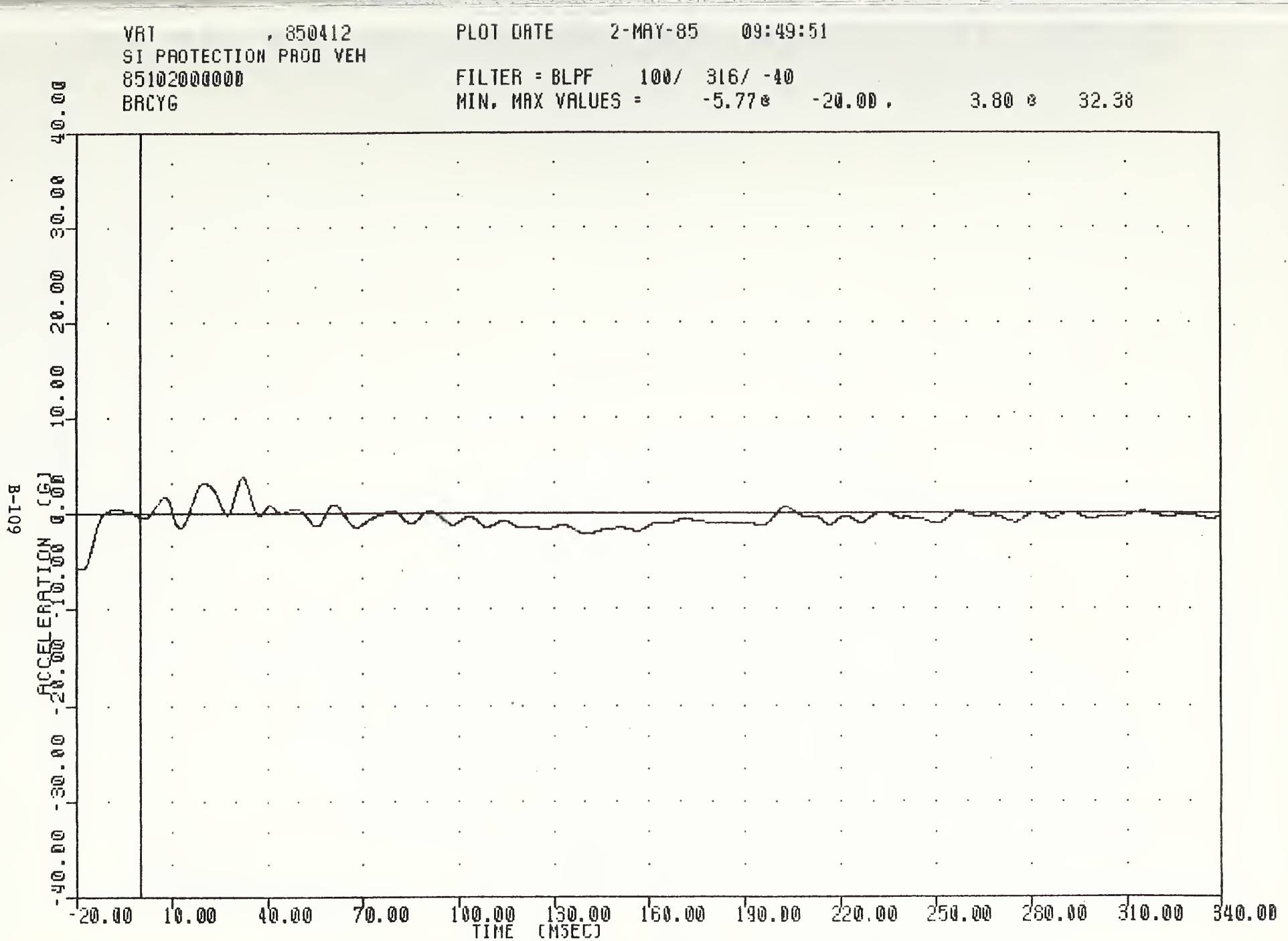
VRT , 850412
SI PROTECTION PROD VEH
85102000000
BRCXV

PLOT DATE 2-MAY-85 14:16:19

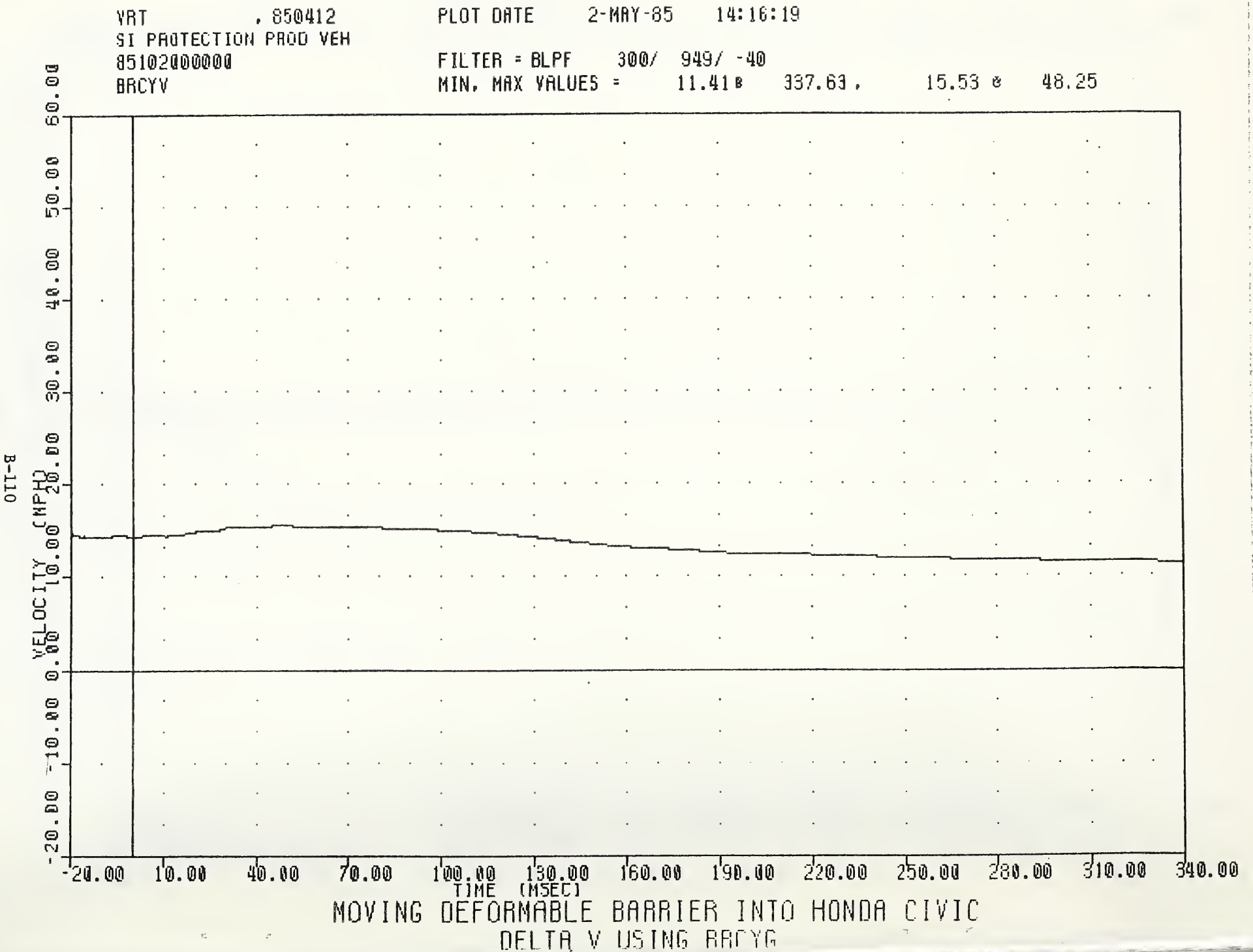
FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = 13.99 @ 92.25 , 30.77 @ 1.63



MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING BRCXG



MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
BARRIER REAR CROSSMEMBER ACCELERATION Y AXIS


VRT , 850412
SI PROTECTION PROD VEH
85102@00000
BRCYV
PLOT DATE 2-MAY-85 14:16:19
FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = 11.41 @ 337.63 , 15.53 @ 48.25
VELOCITY (MPH)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO HONDA CIVIC
DELTA V USING BRCYG

APPENDIX C

DUMMY CERTIFICATION

SIDE IMPACT DUMMY CALIBRATION
DUMMY SERIAL NUMBER 123

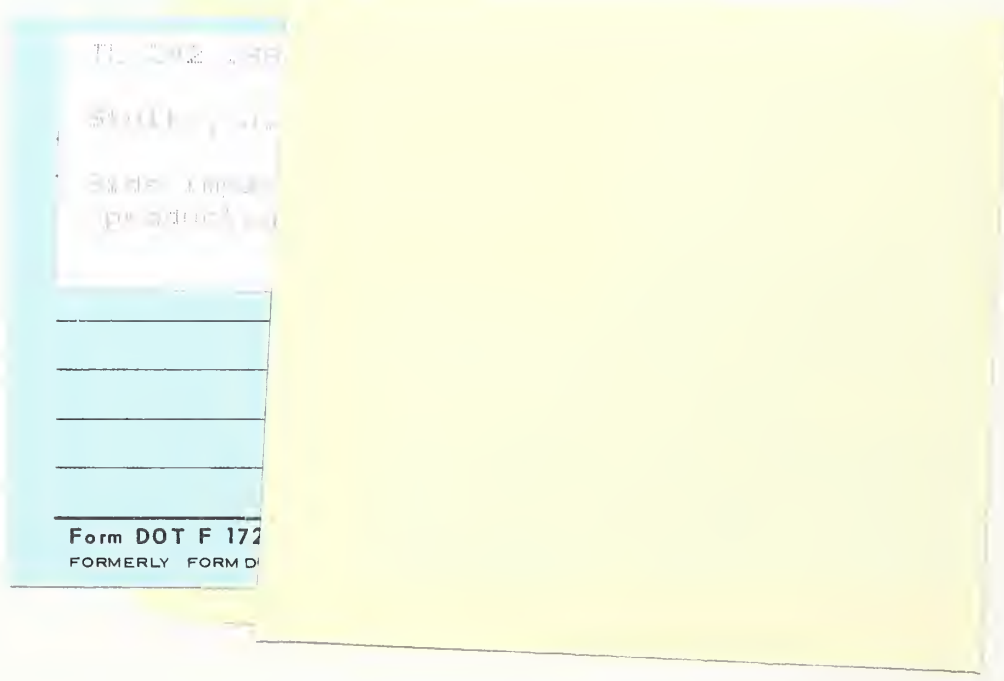
TEST/ DATE	CHANNEL	FILTER CLASS	PEAK ACCELERATION (g) SPECIFICATION	TEST RESULT
HEAD 4/2/85	HEAD Y-AXIS	1000	150-175	177.75*
THORAX 4/11/85	LEFT UPPER RIB Y-AXIS			
	PRIMARY	180	36-50	36.31
	REDUNDANT	180	36-50	37.99
	UPPER SPINE Y-AXIS			
	PRIMARY	180	16-24.6	26.31*
	REDUNDANT	180	16-24.6	26.45*
	LOWER SPINE Y-AXIS			
	PRIMARY	180	17.6-26.4	19.79
	REDUNDANT	180	17.6-26.4	19.38
PELVIS 4/2/85	PELVIS Y-AXIS	180	50-65	53.09

*DUMMY DID NOT MEET SPECIFICATION.

SIDE IMPACT DUMMY CALIBRATION
DUMMY SERIAL NUMBER U02

TEST/ DATE	CHANNEL	FILTER CLASS	PEAK ACCELERATION (g) SPECIFICATION	TEST RESULT
HEAD 3/13/85	HEAD Y-AXIS	1000	150-175	173.40
THORAX 4/11/85	LEFT UPPER RIB Y-AXIS			
	PRIMARY	180	36-50	42.79
	REDUNDANT	180	36-50	45.05
	UPPER SPINE Y-AXIS			
	PRIMARY	180	16-24.6	22.10
	REDUNDANT	180	16-24.6	22.04
	LOWER SPINE Y-AXIS			
	PRIMARY	180	17.6-26.4	18.70
	REDUNDANT	180	17.6-26.4	18.66
PELVIS 2/19/85	PELVIS Y-AXIS	180	50-65	84.8*

*DUMMY DID NOT MEET SPECIFICATION.


Form DOT F 172
FORMERLY FORM D

DOT LIBRARY
00092653